UNITED STATES DEPARTMENT OF AGRICULTURE

PROGRESS REPORT

Task Force to Study the Training and the Scientific Environment of the Department's Research and Education Personnel

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September 1964

INTRODUCTION

Secretary of Agriculture Orville L. Freeman, in a memorandum dated April 14, 1964, established a Departmental interagency task force to study the training and the scientific environment of the Department's research and education personnel.[1] Members of the task force were chosen from among the scientists and administrators of those agencies responsible for research and education activities. The group was charged with the responsibility for evaluating and making recommendations concerning the degree to which Department scientists are trained to meet current and future research and education needs;[2] the intellectual and scientific environment in which these scientists work; and the extent of the Department's participation in the training of scientists.

The task force adopted the personal interview method for obtaining the views of research and education personnel concerning their training needs, opportunities for training, and the research environment within which they work. The employees interviewed were selected to provide representativeness on the basis of grade, agency, division and location.[3] "Location" was divided into the following categories:

1. Washington-Beltsville area.

2a. Land-grant universities and colleges.

2b. Other universities and colleges.

3. Non-university locations with 15 or more scientists.

4. Non-university locations with 5 to 14 scientists.

5. Non-university locations with fewer than 5 scientists.

The orientation of the task force and the design of the interviews did not emphasize refined quantitative and statistical analysis. Rather, major emphasis was placed upon exploiting as fully as possible the opportunities for thorough probing of the views and attitudes of the respondents in order to provide for the task

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1/ See Appendix, Exhibit A.

2/ For data on location and level of education of professional employees in the Department's research and education agencies (as of December 31, 1963), see Appendix Tables 1, 2, and 3.

3/ For detailed summaries on professional employees interviewed, see Appendix Tables 4, 5, 6, and 7.

force full information, varied points of view, creative insights, basic understanding, broad perspectives, and constructive ideas bearing upon the objectives of the survey.

The task force was divided into 8 two-man teams to conduct the personal interviews. Each team conducted several pilot interviews in the Washington-Beltsville area to test a list of key ideas developed by the task force to assure that each team adequately covered the objectives assigned to the task force, and to gain experience.4/ A psychologist, Dr. A. S. Glickman, Chief of the Department's Personnel Research Staff, advised and assisted team members in developing interview techniques.

A total of 419 persons engaged in research and education activities of the Department was interviewed during June and July, 1964. Every effort was made to encourage full participation, and assurance was given that comments would be treated confidentially. This report is based on the information obtained from the individual interviews.

Throughout its assignment, the task force was aware of the broad range of research and technical competence imposed by the diverse research and education activities of the Department. This broad range of competence, requiring different degrees of training, should be considered in developing training programs. Because of the Department's diverse responsibilities, all of its scientists cannot be assigned to basic or highly complex research and education activities, and no effort should be made to train all employees to the level required for the performance of such activities. However, consideration should constantly be given to training needed at all levels to accomplish the maximum effective performance for each individual.

The task force was also aware of the effective report of the Committee on Utilization of Scientific and Engineering Manpower,5/ and the numerous studies being conducted in the area of education and creativity of scientific manpower, 30 of which are being sponsored by the National Science Foundation. 6/

This report of the Department's interagency task force emphasizes those findings which the task force believes should be considered in developing plans for the improvement of training opportunities and environmental conditions for Department research and education personnel. The recommendations reflect the concern and interest of those interviewed, who are believed to be representative of the entire scientific staff of the Department, as well as the interest and concern of the task force members.

4/ See Appendix, Exhibit B, for list of key ideas.

5/ Toward Better Utilization of Scientific and Engineering Talent - A Program for Action. Washington, D. C., 1964. (Report of the Committee on Utilization of Scientific and Engineering Manpower.)

6/ Current Projects on Economic and Social Implications of Science and Technology, 1963. National Science Foundation (NSF 64-10).

The task force is also of the opinion that the action taken by the Secretary to appoint a group to look into the matter of improving training opportunities for Department scientists will in itself stimulate an interest among scientists in improving their training. This stimulation of the need for additional training should result in an improved and more effective public service.

Chapter I

SUMMARY AND CONCLUSIONS

The Department must intensify efforts to increase the effectiveness of its science and education programs designed to help solve the complex problems of agriculture. Improvement in training programs and in environmental conditions for research and education personnel would contribute directly to increasing the Department's effectiveness. The recommendations in this report are based on this premise.

Specific recommendations are presented for each of the three major subjects set forth as objectives I, II, and III of this study.

OBJECTIVE I. To evaluate the training of USDA scientists in relation to current and future research and education needs, the opportunities to improve that training,7/ and the extent to which these opportunities are being used.

Department scientists in research and education generally consider themselves to be well-trained to carry out their assignment. Most scientists, however, expressed a need for additional training to keep pace with the developments in their disciplines. The younger scientists, particularly, were aware of this need. There was, however, a surprising lack of understanding among many of those interviewed of the need for training in order to contribute more effectively to the solution of the increasingly complex research and education problems facing the Department.

For the most part, excellent opportunities exist in the Washington-Beltsville area and on the campuses of land-grant colleges and universities for formal training of scientists. It should be recognized, however, that no one location affords training opportunities that excel in all disciplines. The Washington-Beltsville area also affords unusual opportunities to attend scientific lectures and meetings of professional societies, and to participate in workshops and seminars. Land-grant institutions also afford opportunities for attendance at workshops and seminars, and, in addition, provide the highly regarded opportunity for interchange of ideas with scientific peers. The small field locations, because of their isolation, provide little or no opportunity for formal training or association with peers. The Government Employees Training

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7/ Training was interpreted by the committee as including formal academic study as well as any kind of experience or instruction which better qualifies scientists to carry out their assignments.

Act,8/ adjusted tours of duty, reassignment of duty station, and approval to attend scientific meetings are means available to administrators to encourage training.

Training opportunities are not being used by scientists to the extent thought desirable by the task force and by the scientists interviewed. Reasons for this are: (1) lack of knowledge of training opportunities, and particularly among those in the lower grades; (2) uncertainty as to Department policy on training and retraining; (3) narrow interpretation of the provisions of the Government Employees Training Act; and (4) lack of encouragement or, in some instances, actual discouragement from supervisors. Those most active in furthering their training were the younger scientists. Those located at land-grant institutions were generally making good use of their opportunities despite the inconvenience imposed by adjusted tours of duty. Among those located at small, isolated stations, there were some who were making commendable efforts to keep abreast of advances in their scientific fields. Many of the older scientists and research supervisors demonstrated little or no interest in further training for themselves.

Recommendations:

1. A policy statement on education and training for scientists should be developed and made available to all employees engaged in research and education. 9/ This policy statement should:

   a. Reaffirm the interest and concern of the Department in continued training of scientists in research and education.

   b. Emphasize the responsibility of the research or education program supervisor to give each scientist working with him the direction, assistance, and encouragement essential to his understanding of the program of the agency, the need for and objectives of the research to which he is assigned, and the contribution he is expected to make.

   c. Encourage allocation of funds from regular agency appropriations to meet those training needs deemed essential for increasing the effectiveness of the agency's scientific manpower.

8/ The Government Employees Training Act, approved July 7, 1958, is the basic statute authorizing employee training throughout most of the Government. In general, authorities granted by the act are sufficiently broad and flexible to enable a department to provide whatever training is necessary to develop the skills, knowledge, and abilities that will best qualify employees for the performance of official duties.

9/ The Director of Science and Education has requested the task force to prepare for consideration and review a proposed policy statement.

d. Emphasize that the selection of scientists in research and education for training should reflect recognition of professional accomplishment and potential for future growth.

e. Encourage each research and education unit to develop specific training and retraining programs for scientists with goals for each branch, division, and agency.

2. The Department should encourage and assist all research and education agencies to develop a procedure for informing all scientific workers of the training opportunities available to them. Each agency should designate a point of contact where its research and education personnel could obtain information on availability of training opportunities to meet special needs and procedures for applying for such training.

3. A study and retraining leave program should be established within the Department. Participation should be limited to those who have demonstrated unusual scientific competence.

4. Each research and education agency in the Department should develop a program in which the research leader would determine, after consultation with the scientist concerned, individual training needs for each scientist under his supervision. Special consideration should be given to the training needs of those who have completed their highest academic degree 5 or more years ago, and who have had little or no formal study and training since that time. Technical support personnel, particularly those with several years of experience, should also be given training opportunities to increase their capabilities and develop their full potential.

5. Opportunities should be provided scientists to take formal academic courses related to their field of work without reference to fulfilling the requirements for an advanced degree.

6. The outstanding scientific competence within the Department should be utilized more fully for strengthening training activities within and among agencies.

7. Greater opportunity should be provided scientists in non-supervisory positions to participate in developing topics and choosing speakers for seminars and workshops.

8. Authority should be delegated to research division directors to approve outside training under the Government Employees Training Act for periods up to 80 hours.

9. A more intensified and continuing study should be made of the training and retraining needs of Department scientists in relation to research and education programs.

OBJECTIVE II. To evaluate the intellectual and scientific environment of the Department scientists and the extent to which this encourages or discourages productive research and education.

A. Intellectual and Scientific Environment

The intellectual and scientific environment prevailing at a given research location exerts an important influence upon recruitment, retention, training opportunities, and professional growth of personnel.

Among the factors considered most important by scientists in promoting personal satisfaction and research productivity in a given environment were geographical location, number of scientists at the location, opportunity for creative research, and prompt publication of research results.

Examples of intellectual and scientific isolation were found in every type of geographical environment studied. In some instances isolation was the result of organizational or supervisory restraint. In others the lack of participation in scientific exchange resulted from lack of initiative on the part of the individual scientist.

Most scientists were pleased with the degree of their participation in planning the research they were conducting. Involvement of the scientist in planning stimulated greater interest on his part in his research problem.

Recommendations:

1. The Department should encourage greater participation by scientists in the scholarly activities of recognized professional societies.

2. The Department should develop closer cooperative relations with universities and colleges in order to increase opportunities for intellectual exchange through seminars and other scientific contacts.

3. To offset the disadvantages of isolation to professional development resulting from organizational policy, geographical location, and intellectual environment--

   a. The Department should make more frequent use of temporary intra-agency and interagency reassignments in its training and educational programs.

   b. Special effort should be made to increase interdisciplinary and interagency cooperation.

   c. Continued emphasis should be placed on moving scientists to locations providing better scientific environment.

d. Supervisors should visit field locations more frequently, with particular attention to isolated locations.

e. Research at isolated stations should be relocated in a scientific community whenever the major aspects of their program permits.

f. New research facilities should be located on or near a university campus when the program permits.

g. Scientists should be encouraged and provided every opportunity to participate in seminars related to their work.

4. Greater recognition should be given to the essential need for good library services in planning and projecting effective research programs.

5. Deadlines should be imposed on the clearance or disposition of manuscripts at all levels, and the authors should be informed promptly of action.

6. Although the Department's promotion plan for scientists has had a positive effect on their morale, improvement should be made in the Guide for the Evaluation of Positions in Applied and Basic Research with special attention given to possible over-emphasis on publications in evaluating individuals.

7. Detection and encouragement of scientific creativity should be the fixed responsibility of supervisors.

8. Supervisors should spend more time in orienting new employees, in defining their research problems, and in explaining how their research problems fit into the overall program of the agency.

B. Physical Environment

In recent years the Department has made progress in constructing excellent laboratories. However, many examples of obsolete, antiquated, and unsatisfactory laboratories were observed. There is urgent need for new laboratories or for modernization of existing facilities and equipment.

General need was expressed for additional well-trained support personnel.

Recommendations:

1. New facilities should be constructed, existing space renovated, and equipment in permanent laboratories upgraded as means of increasing the efficiency of scientists, and of establishing a better competitive position for the Department in recruitment and retention of outstanding personnel.

2. Additional technical support personnel should be employed to further the efficiency and productivity of scientists. In some instances better balance between the number of scientists and support personnel at a location could be achieved through improved budget management.

3. A personnel classification series should be developed for research assistants with skills and abilities intermediate between those required of subprofessional technicians and professional scientists.

4. Greater use should be made of administrative management assistants, at those locations with personnel to justify the expenditure, in order to relieve scientists of burdensome, administrative-type paper work. The Government's program to reduce paper work should be strongly supported.

OBJECTIVE III. The extent of the Department's participation in the training of agricultural scientists through intramural programs and in cooperation with universities.

The Department has long been and will continue to be a major employer of scientists trained in colleges and universities. However, with its excellent research programs and research facilities at some locations and with its outstanding scientific personnel, the Department has great potential training capabilities. The rapidly increasing demand and competition for qualified scientific personnel make it imperative that these training potentials be used for the development of an interest in science among our youth, in the training of university students seeking academic degrees, and for the continued education and training of Department personnel.

Recommendations:

1. Agencies should be encouraged to develop individual and joint training programs utilizing the outstanding competence and unusual physical facilities available in many disciplines within the Department.

2. The Department should obtain legislative authority to sponsor undergraduate, graduate, and postdoctoral scholarships, fellowships, and assistantships.

3. The Department should determine its future scientific personnel needs, and work with appropriate colleges and universities in developing courses of study to meet those needs.

4. The Department should establish a policy encouraging its scientists to participate as members of graduate faculties of colleges and universities when such opportunities are available

to them, and to accept, within practical limits, those teaching and counseling assignments that relate to their work.

5. The Department should sponsor a program to aid and encourage promising high school students that would extend through their undergraduate and graduate training.

6. A policy should be established to permit scientists, on official time, to participate in science fairs, on scholarship committees, and to be guest lecturers at schools on the elementary and secondary levels.

CHAPTER II

Survey Findings on Objective One

TRAINING TO MEET PRESENT AND FUTURE NEEDS

Summary:

In general, the Department has been able to recruit well-trained personnel in research and education. Growth in professional competence, however, is needed to meet the exacting demands of increasingly complex problems. The availability of and participation in continuous training programs would enable all personnel to keep abreast of the rapid increase in scientific knowledge and techniques.

The attitude and interest of agency administrators or research supervisors toward training largely determine the quality of and participation in training programs. For example: In some locations training activities were practically nonexistent although the opportunities were excellent, while at others, with fewer opportunities, dynamic training programs were underway as a result of enthusiastic leadership and encouragement.

Desire for formal and informal training is closely related to the academic degrees held and the age of scientists. Those scientists most active in formal university course work were those seeking an advanced degree. After an advanced degree has been obtained, the scientist becomes primarily interested in informal training--working in other laboratories and with other scientists. As he increases in years of service, his interest in formal academic training diminishes. His interest in informal training also shifts. For the most part he becomes satisfied with technical work conferences, short courses in special techniques, and other related types of training. In general, however, the higher the level of training of a scientist, the stronger is his realization of the need and desire for additional training.

The Department has a large reservoir of scientific talent and many excellent facilities that are not being used in training programs. Ways should be found to use these resources, such as in technical seminars, in working conferences, through transfer of employees between locations, and through exchange of specialists.

Scientists generally are not well informed on the Department's policies as they relate to training, or on the use of various training authorities and mechanisms. Some had no knowledge of the existence of the Government Employees Training Act. In most instances, lack of information in this area reflected ineffective communication.

Many research and education personnel expressed an urgent need for subprofessional and clerical training programs.

Scientists were almost unanimous in their belief that a study and retraining leave program would (1) raise their level of competence, (2) improve opportunities to recruit outstanding personnel, and (3) enhance the Department's leadership in research and education. They believed that participation in such a program should reflect recognition of unusual achievement or demonstrated potential.

The Washington-Beltsville Area

In the Washington-Beltsville area, more than at other locations, there is a distinct contrast in personnel assignments that strongly influences views toward training and training needs. On the one hand, there is a concentration of research administrators and research supervisors who generally represent mid- or advanced-career status. In contrast, there are scientists in all groups actively engaged in research and education but with substantial numbers in the middle grades and age classes.

1. Training with Respect to Current and Future Needs

Research and education personnel in the Washington-Beltsville area considered themselves to be well-trained to meet the needs of current assignments, and to be as well-trained as those in comparable non-Federal programs. Most scientists, however, recognized the need for training to keep them abreast of advancing science and the growing demands of their jobs. The younger scientists particularly were aware of and concerned about additional training, especially in such specialized areas as statistics, electronics, and instrumentation. Further training was of less concern to older scientists and research administrators, some of whom recognized the need for research management courses. Numerous non-supervisory scientists directly or indirectly suggested that research supervisors might benefit from training in research administration.

2. Opportunities to Improve Training

Most scientists believed that this location offers good to excellent opportunities for training. Opportunities for formal course work in the area colleges and universities up to the doctorate level are good in most fields. Some believed that opportunities for training in depth in some of the biological sciences were not outstanding, and others expressed the view that opportunities for training in some highly specialized techniques and in formal work at the post-doctoral level are only average or below.

The Washington-Beltsville area, in the opinion of many scientists, offers superior opportunity to attend lectures given

by prominent scientists, to attend national meetings of professional societies frequently held in the area, for taking special short courses, and for taking part in seminars and workshops. Numerous opportunities are afforded research administrators to attend management improvement courses sponsored by many local groups, but several individuals doubted the value of many of these.

Scientists differed in their evaluation of seminars as a training device. Some valued these highly, especially interagency meetings, and attended them regularly. Others observed that they only "talk to themselves" at seminars. Workshops, however, were held generally to be valuable training aids. Many scientists believed workshops would be more useful if program administrators vested the planning activities in the scientists.

Considerable variation in opinion was expressed in regard to the training opportunities offered by the USDA Graduate School. Some praised it and cited instances where special efforts had been made to organize courses not usually offered. Others were critical because they thought the offerings were too limited and the level of instruction sometimes too elementary.

The area affords excellent opportunities for training in short courses designed to improve techniques and work habits. Specifically mentioned were courses in rapid reading, technical writing, and oral and written communication. Many scientists believed such training was worthwhile, while others doubted its permanent value.

3. Use of Opportunities to Improve Training

USDA Graduate School courses were popular with many scientists; others were enrolled in university course work leading to advanced degrees. Large numbers took advantage of the numerous short courses frequently available to them, including those in rapid reading, communication, and writing, although some scientists believed administrators approved large numbers for attendance "to make a showing."

The younger scientists, with or without a Ph.D. degree, made the greatest use of training opportunities in this area. The older scientists, and especially the research supervisors, expressed little interest in any kind of training for themselves. In self-training, however, nearly all scientists exhibited a marked interest. They reported consistent use of library facilities to keep informed in their fields, frequent attendance at professional lectures, and active participation in professional societies.

Substantial deficiencies were encountered in the use of training opportunities. Among personnel in the lower grades, there was a startling lack of knowledge regarding the Government Employees Training Act and other training authorities. Some scientists indicated that this lack of information was by design of their supervisors. Most of them reported that supervisors were

reluctant to use the training act, using such descriptive terms as "apathetic," "not encouraged," "not exploited," or "tightening up of the privilege."

Locations at Land-Grant Institutions

1. Training with Respect to Current and Future Needs

Department scientists stationed at the 11 land-grant institutions comprising this category of locations considered themselves to be at least as well-trained as the university scientists in the same disciplines. The academic environment in which they work exerts a direct and positive influence upon their awareness of the need for continued training and education to keep pace with rapidly changing methods and techniques. Their location usually affords them an opportunity to fulfill these needs. A large number of Department scientists located on land-grant campuses avail themselves of these opportunties by enrolling in formal course work which, in many instances, leads to advanced degrees.

As a group, Department scientists assigned to land-grant locations have maintained a high level of interest in training to improve their professional competence.

2. Opportunities to Improve Training

While the land-grant institutions normally offer an ideal location in terms of availability of training opportunities, Department scientists at these locations indicated that there are some problems in meeting training needs. As might be expected, several commented on the unavailability of specific courses relating to their program needs, or on the relative weakness of the university's education and research programs in their particular area of interest. They also indicated insufficient opportunity for training in techniques, methods, and instrumentation. Although the institutions offered an extensive range of formal course work, a variation in the quality of instruction was noted. Opportunities for learning through participation in seminars and workshops were very good, because of the immediate concern of land-grant institutions with agricultural research, although variation in quality and usefulness was reported.

There was general agreement among the scientists that one of the most important advantages of this location category to improve their technical competence was the opportunity for frequent interchange of ideas and suggestions with scientific peers.

The expressed beliefs of Department scientists concerning the strengths and weaknesses of a university's training and research program in a given area of work were very consistent with the degree of cooperation existing between the Federal project and the institution. Usually, when they believed that cooperative relations and scientific interchange between Federal and State employees were good, the Department

scientists indicated that training opportunities in their areas of interest were also good at the university.

Scientists located at land-grant institutions generally were well informed concerning the availability of training opportunities through the Government Employees Training Act and through the use of adjusted tours of duty.

There were widespread expressions among the scientists that a study and retraining leave program similar to the sabbatical program of universities should be available to Department personnel. Many indicated that such a program should include the opportunity to work at laboratories of their choice for 6 months or a year.

3. Use of Opportunities to Improve Training

Department scientists at most land-grant locations are making good use of available training opportunities. A large number either are taking or have completed formal course work. Many of these are working toward an advanced degree. In most instances, such training was being accomplished outside of normal duty hours or under adjusted tours of duty.

There appeared to be considerable hesitancy on the part of agencies to finance formal course work under the Government Employees Training Act. Restrictions contained in the Act against its use to support training for the sole purpose of obtaining an academic degree have been narrowly interpreted and applied. Agencies have often refused to pay the fees for an employee to enroll in a course of study that could eventually lead to a Master's or Ph.D. degree. This has been disappointing to many scientists.

Participation by Department scientists in seminars and workshops on land-grant campuses is variable. Units with relatively small numbers of scientists primarily engaged in cooperative efforts with State researchers reported high participation. There was less active participation on the part of the larger Department units that were separately housed and had their own facilities.

While widespread use is made of adjusted tours of duty to allow scientists to enroll in formal course work, some dissatisfaction was reported. The adjusted tours normally provide for scientists to make up their required hours of duty during evenings and on weekends. Many believe they should be allowed to take formal course work during normal duty hours, and especially if the course work is closely related to their research effort.

College and University Locations, not Land-Grant

1. Training with Respect to Current and Future Needs

This category is comprised of Department-owned research

centers with relatively large and self-contained staffs, and which are located near or adjacent to a college or university campus. The personnel at the 9 locations in this category generally believed that Department scientists compared favorably with scientists in universities and private industry in training and competence. Most, however, expressed an interest in further training activities in order to keep up with developments in their field and to broaden their understanding of closely related disciplines upon which they draw. This sense of need for further training varied greatly among individuals and among the 9 locations.

2. Opportunities to Improve Training

Formal academic course work was available to scientists in all locations. The value of the courses offered depended upon the nature of the training needs of the individual scientist. The smaller liberal arts colleges, for example, offer few courses directly relevant to the training needs of the Department's science personnel.

In one of the larger Department centers, college course work was available but had to be scheduled outside of work hours and taken at the research worker's own expense. In other centers, opportunities for formal course work were more favorable.

Some centers organized special training programs for their personnel, with instruction being provided by visiting lecturers and their own specialists.

Visits to other research centers were mentioned as possible but infrequently used training opportunities--infrequently used because of restrictions on travel funds. Reading to keep up with the scientific literature in their fields was considered an important self-training activity for all scientists at all locations. Policies in regard to attendance at professional meetings ranged from liberal to restrictive.

3. Use of Opportunities to Improve Training

At one of the Department's larger research centers, scientists frequently participated in formal course work offered by local universities. At several locations the scientists frequently participated in university seminars and attended work conferences, although in one location attendance at university seminars during work hours was not encouraged. Department-sponsored courses and seminars were generally well attended. Scientists at one location personally financed a course in advanced chemistry arranged by program management personnel.

Only a few scientists were familiar with the Department's various types of training authorities. Use was being made of adjusted tours of duty in only a few instances.

Those interviewed reported very little use was being made of the potential within the centers to develop effective training programs. Lack of interest on the part of program management personnel and lack of support of investigation leaders for participation in training were mentioned as the key deterrents.

Non-University Locations with 15 or More Scientists

1. Training with Respect to Current and Future Needs

Scientists at 5 locations in this category were interviewed. Nearly all believed they were adequately trained originally, but many expressed the need for additional training to carry out current assignments. The kind of training proposed ranged from formal course work not available in this environment to assignment on projects in other laboratories and cooperative work with foreign scientists in highly specialized fields.

2. Opportunities to Improve Training

Because of location, opportunities in the form of substantive, formal university course work were generally extremely limited, and those that were available were usually considered "poor." There was a small undergraduate or 2-year college in or near most of these locations, but almost invariably the courses offered did not meet the needs of the scientists. In one location, special courses were offered, based upon demand, at the local branch of the State university, but this was an exception to the unavailability of adequate on-site training. Employees at one location stressed the lack of Department-sponsored technical workshops as a deterrent to advanced training, the inadequacy of the small local college, and the virtual lack of contact with university people.

3. Use of Opportunities to Improve Training

The amount of formal course work undertaken by workers at these locations varied from "none since coming to the lab" to one location where several of the employees interviewed had obtained Master's degrees while at the location, and others had been granted leave without pay to work toward Doctor's degrees. However, the remoteness of most locations generally limited further training to correspondence courses, reading, and other forms of self-training. This self-training was taking place at almost every location visited.

Non-University Locations with 5 to 14 Scientists

1. Training with Respect to Current and Future Needs

Scientists at 5 locations in this category were interviewed. Generally, they considered themselves to be well-trained. Some, at considerable sacrifice of time and money, had obtained additional training, but these and many others believed they needed

further training, particularly refresher training in their disciplines.

2. Opportunities to Improve Training

The availability of formal university course work at these locations was practically nonexistent. Regional workshops, correspondence courses, and special short courses, such as "Technical Writing," were available to a few locations, but these opportunities were usually rated "poor."

3. Use of Opportunities to Improve Training

People at only one of these locations reported they had taken formal course work. At the same location some individuals, almost entirely on their own initiative, were making serious efforts to obtain training through correspondence with colleagues, reading scientific journals, and correspondence courses. By contrast, scientists at another location, although aware of their limitations and needs for training, believed that their environment did not "give much attention to training," because of "a crash program to get the job done." These two examples represent the extremes in this location category.

Personnel at most of these locations had very limited knowledge of the various kinds of training assistance available from the Department. It is believed that environment rather than lack of knowledge of Department training authorities was primarily responsible for training inactivity.

Non-University Locations with Fewer Than 5 Scientists

1. Training with Respect to Current and Future Needs

Scientists at 7 locations in this category were interviewed. All considered themselves adequately trained for their present assignments, but one stated that his potential could not be developed at his present one-man location. Another, who has post-doctoral training, has almost completely departed from his discipline, and is conducting essentially an applied testing program. He considers his early training "terminal in nature," and did not appear to be concerned with further training. He did express an interest in observing related work at another location. By contrast, less well-trained employees at most other locations were concerned about further training, and were trying to do something about it.

2. Opportunities to Improve Training

Opportunities for further training in these locations are not good because of their relative or actual isolation. One location is near a university whose course work is not relevant to the Department program; two are 50 miles from universities; and one is 70 miles from a university.

3. Use of Opportunities to Improve Training

In general the scientists at these locations are trying to keep pace with their fields of science despite their isolation. One man, located 70 miles from a university campus, makes monthly trips there, and believes he is able to keep fairly well informed through visits with the university staff and by taking advantage of the library facilities. The distance almost precludes the possibility of formal study. This scientist is interested in the Exchange Authority and a leave program in order to further his education and improve his competence. On the other hand, he expressed the view that the research for which he is responsible would suffer from his absence. At another location one man, of a 2-man staff, was driving 50 miles each way--one evening a week--to take course work to increase his work efficiency. At a third location a scientist was attending a local university at night to further his self-improvement.

The personnel at the locations in this category was not adequately informed regarding the Department training authorities.

Chapter III

Survey Findings on Objective II

INTELLECTUAL AND SCIENTIFIC ENVIRONMENT

Summary:

A great variability was observed with respect to environmental factors. Some was related to the type of location, but much of it was attributed to factors such as age of the scientist, extent of formal training, time elapsed since formal training, the agency and research program, and the characteristics of the individual research scientist and his program supervisors.

The strengths in the environment generally included (a) freedom to plan and execute research programs, (b) freedom and opportunity to publish, and (c) generally adequate library services (either from the Department or from nearby universities). Rather widespread shortcomings for which positive actions and programs are required included (a) inadequate supporting personnel, (b) inadequate intellectual environment at small laboratories at non-university locations, (c) inadequate space and facilities in Washington-Beltsville area, and at some field locations, (d) concern about opportunities and support for basic research, (e) delays in clearance of manuscripts, especially for USDA publication, (f) need for liberalization and more flexibility in interpreting policy on attending scientific meetings, and (g) lack of communications among scientists and between non-supervisory scientists and their supervisors.

There were other shortcomings specifically related to a location and/or to an agency or division program that suggest more attention be given by all research and education program administrators and to the evaluation of intellectual and scientific environments.

It should be noted perhaps that the goal of a productive research worker is not always correlated with that of a "happy" research worker. Some studies of research environments have suggested that irritants and pressures may produce more scientific discoveries and accomplishments than a frictionless environment. Also, it should be noted that the interviews in themselves were a stimulant to elicit critical comments from those interviewed.

Program Environment

Degree of Freedom to Plan and Execute His Own Work

There was a high degree of satisfaction among scientists

regarding the degree of freedom they were allowed to plan and execute their own work, although there were some significant exceptions. A few scientists, at various grade levels, had strong beliefs that their work was too directed and channeled, and that they had little opportunity to demonstrate individual initiative. Most scientists at the smaller and more isolated locations (in number of scientists and distance from a university) recognized they had a well-defined but a limited area of research, but within these limits they thought they had ample freedom to plan and carry out their work. Some scientists in Washington-Beltsville and in several field locations reported instances in which they thought that perhaps there was too much freedom, and cited examples of new employees being assigned long-term, difficult projects without adequate supervision and understanding of program objectives.

Some of the younger, more highly trained scientists reported that the Department's research activities did not provide them with the opportunities for basic research they sought and expected when they accepted employment although several noted a trend to more basic work.

Use of Scientist's Competence

Many scientists believed the Department was making good use of their competence. The dissatisfactions reported centered on the need for more and better subprofessional help to perform routine laboratory analyses and maintenance of laboratory and equipment so more of the researcher's time could be devoted to more productive research activities. Some suggested that service units could be used more efficiently to perform various types of analytical tests and such special services as data processing. Some dissatisfaction was also reported on type of research and on diversions required by special assignments and administrative responsibilities.

Recognition and Rewards

Most scientists looked on promotion, delegation of greater responsibility, senior authorship on publications, and acceptance by their fellow scientists as the most rewarding recognition. They also believed that salaries in middle levels, because of increases in recent years, now compared quite favorably with those in industry and universities.

Some dissatisfaction was reported with the promotion system, but most believed they had been fairly treated, although some said that older, deserving employees sometimes were passed over to hire inexperienced employees with advanced degrees.

Some skepticism was expressed regarding opportunities to advance to high grade levels as working scientists; the supervisory ladder still offers greater opportunities. Many

expressed the view that the promotion policy put too much stress on "publish or perish." The emphasis on publication, in the opinion of several, resulted in the preparation of papers that made little or no contribution to science. Scientists at small field stations thought they would not get higher grades there, but in general they tended to accept this or were reluctant to move from their location for a raise in grade.

Little enthusiasm was expressed toward the Department honor award program; in fact, some believed it was unnecessary.

Involvement in Outside Activities

There was only moderate involvement in extension-type and administrative activities and industry contacts. It varied with type of location and grade level of employee. In exceptional cases, involvement ranged up to 75 percent. Involvement in extension-type activities was high at some small field stations because of the applied type of research, bordering on extension work, conducted at the locations. There was a heavy concentration of nonresearch activity by research scientists at higher grade levels in the Washington-Beltsville area and at large field locations, and those supervised by these scientists often expressed concern. Many appeared to enjoy involvement in outside activities, welcomed these activities, and found them valuable, while others were disturbed and distracted by such activities.

Attendance at Scientific and Professional Meetings

Scientists generally placed a high value on attendance at scientific and professional meetings and taking part in the activities of their professional societies. A significant number hold responsible positions in their societies. Many believed liberal policies prevailed for attendance at scientific meetings, and especially those local or regional in character. There appeared to be a considerable variability in policy within the Department, with little consistency even within a Division. Limited travel budgets were frequently given as the reason for being unable to attend meetings. A large number sharply questioned the advisability of restricting attendance at national and international meetings to those who had papers to present. Some thought this could lead to the preparation of inferior papers; to them, the value of a meeting is associated with scientific contacts and intellectual environment as well as formal paper presentations. Several younger scientists in the lower grades pointed out that their supervisors could attend but they themselves had little chance. They believed they could benefit from occasional attendance even though their type of research activity offered little opportunity for preparing a paper that would be accepted. Several suggested a policy of attending a meeting at least once a year, and others once every 2 or 3 years, on official time and expense and whether or not they presented papers.

Evaluation of Program Environment

In general, the task force found no important restrictions on the freedom of Department scientists to plan and carry out their work within the scope of their assigned research. However, unsatisfactory elements in program environment were observed in a majority of the locations, and often there was a marked variability among units at the same location. There are definite limitations in opportunities for basic research for many scientists at many locations, especially at the small field locations, but this is by no means limited to these locations.

Recognition for scientists is generally favorable. In several instances, however, there was a need for better communication between scientist and supervisor, as well as a need for examination of promotion policies. Some research assignments offer less opportunity than others for publication; if this is being recognized in evaluation for promotions it should be communicated to the scientist.

Attendance at scientific and professional meetings, local and regional, is satisfactory. However, attendance at national and international meetings appears restrictive in many cases. A greater liberalization and flexibility is needed in the interpretation of the Department's policy statement, Attendance at Meetings (Chapter 6, Section 7, 1 AR 400-401).

Intellectual Environment

Opportunity to Communicate with Other Scientists and Identification with a Scientific Community

At land-grant university and college locations, most scientists were well satisfied with their opportunities to communicate with other scientists and their identification with a scientific community. Some scientists thought the opportunities could not be surpassed. In a few cases scientists were critical of the adequacy of an institution's staff and its graduate programs, and reported there was one-way communication--from the Department to the college. In other cases, scientists expressed views that the individual university scientists had little interest in the Department's "applied" research. Active interchange among scientists was most evident in basic research. Instances were reported of a definite lack of communication between university faculties and Department staffs especially when the Department staff was located in a separate building at some distance from the campus.

Scientists located at smaller locations away from universities reported definite limitations and lacks in their intellectual environment by not being able to exchange ideas with other scientists in informal discussions, lectures, and seminars. For the most part, scientists did not have close contacts with the personnel of nearby colleges and universities that were not land-grant institutions. Scientists often said that they were not interested in

developing closer contacts because of the inadequacy of the area college or university. In some cases, however, good communications were reported.

Among scientists in the Washington-Beltsville area, an extreme range of opinion was reported. Some stated there could be no better location for scientific interchange and a satisfactory scientific community. Others experienced lonesomeness, isolation, and severe compartmentalization of research activities. Similar views were obtained from some scientists in large field stations. Some younger scientists expressed a reluctance to call on the top scientists at their locations for assistance.

Some scientists in college locations reported regular participation in college seminars and more informal communications; others reported a significant lack. Personnel in large laboratories tended to communicate less with university staffs than did personnel in small laboratories at university locations. Some reported sufficient meetings of entire laboratories or divisions, but suggested more attention should be given to small group discussions.

Freedom to Publish

There was a high degree of satisfaction with the opportunity for and lack of restriction on publishing research results. To many scientists, freedom to publish was an outstanding attraction of Department employment, especially when compared with industry. The scientists put a high premium on opportunity to publish through Department periodicals and its several series of publications, in professional journals, and in industry publications.

There were, however, several negative reactions in regard to publication. Some thought there was too much emphasis on publishing, and a few had no particular interest in publishing and thought it interfered with other work. Many had sharp criticisms of "intolerable delays of up to 3 or 4 years" in getting manuscripts cleared and published through Department channels, pointing out that the results were then out of date and of little use. These criticisms included some delays in obtaining approval of papers prepared for acceptance at scientific meetings or by journals. There were a few objections raised about too many authors, including supervisors, who had little direct participation. Also, a few in the Washington area were concerned about "censorship" of reporting their research findings.

Library Service

Reports on library service ranged from poor to excellent. Criticisms of the National Agricultural Library often centered on delays in getting materials. The library was rated good on historical materials but inadequate on recent materials, particularly in the social sciences. Land-grant libraries were generally reported as excellent. Library services at some of the

Department's large stations were rated excellent; at one station it was the one environmental factor that all those interviewed gave a unanimous high rating. At small field locations library service was usually limited, but often the scientists did not express much concern or need for better services. There was little knowledge at several small field locations of the services available from the National Agricultural Library.

Evaluation of Intellectual Environment

Non-university locations were definitely inferior with respect to overall scientific and intellectual environment. The smallest stations were least desirable. Several cases were observed where individuals through individual initiative made the best of an inadequate environment.

Scientists at university locations generally believed that being stationed on or near a university campus definitely enhances their intellectual environment. However, many apparently did not take any advantage of their location. It was evident that with respect to the Washington-Beltsville area and university locations the potential exists for the most part for a good intellectual environment. Many individuals take advantage of this potential, but in some cases stimulus on the part of research supervisor is needed to facilitate more interchange among scientists.

Physical Environment

Supporting Personnel

A recurring dissatisfaction was expressed by scientists at all types of location about lack in quantity and quality of supporting staff technicians and clerk-typists. At one location there was one typist for 12 professionals; in another there was one laboratory assistant for 8 scientists. Many scientists reported that their research progress was hampered because they were doing routine jobs that could be done by supporting personnel. Low salaries in some cases resulted in losing able technical aides.

Several in the Washington-Beltsville area complained of being perpetual training grounds for secretaries who move on to higher-level jobs as secretaries to administrators. This resulted in the loss of the considerable time required in training typists to become familiar with a particular research environment. For those stationed in university departments, State funds often were not available to employ the support personnel that was a State responsibility under the cooperative agreement.

Space

From the standpoint of office and laboratory space, generally crowded and antiquated conditions prevailed in the Washington-Beltsville area. From scientists' views there was no foreseeable

relief. There was some crowded space reported in universities and in the large laboratories, but scientists often thought that conditions had improved and further improvements were forthcoming. In smaller locations, the scientists reported space conditions varied from fair to excellent.

Facilities

In some cases, scientists reported availability of first-class laboratory equipment and facilities as an important attraction and feature of Department employment. All they had to do was request the newest thing and chances were good they would get it. In many field locations facilities were reported as excellent or improving. General dissatisfaction was noted among scientists in the Washington-Beltsville area.

Laboratory Location

For the most part, scientists agreed that their present location was best for doing work. Many scientists noted that their location in the "heart of industry" or the problem area was necessary to the conduct of the research. Several scientists at the smaller locations thought that the activity should either be terminated or moved to a university location.

Evaluation of Physical Environment

Availability of adequate facilities is highly important to scientists and is an important influence in recruiting and retaining them. Physical facilities at some field locations are excellent, and others are poor. Facilities in the Washington-Beltsville area are not good, and are losing ground relative to those of universities and other research institutions who obtain support from foundations, National Institutes of Health, National Science Foundation, and from other government programs.

Some Department research projects may be located in isolated areas which, in view of today's rapid communication and travel, could be conducted just as well in a more suitable intellectual environment. Where the location is necessary, because of the type of research activity or other considerations, opportunity should be given individual scientists for training through special assignments at other locations. Many research workers, however, have developed strong personal attachments to living in their present location; they would need to be convinced of the desirability and advantage of moves.

The Department needs to strengthen the quality, training, and status of professional aides (laboratory assistants, technicians, economic assistants, etc.) to keep young, well-trained scientists from becoming disillusioned with "busy work," and to keep from wasting the time of senior scientists. A higher priority should be given to improving the balance between support personnel and research workers.

Quality of Peer Colleagues and Program Supervisors

Competence of Colleagues

In the scientists' views, the competence of colleagues range from reasonably good to excellent. To a majority of those interviewed, Department scientists equal or excel their non-Department peers; to others, they don't measure up as well. Most believe they are as capable as their colleagues in industry, but in some cases they may not equal the competence of some university scientists. Younger scientists tend to think that older ones are behind in their disciplines; some of the older ones recognized their shortcomings.

Competence of Research Program Supervisors

There were some reports that research supervisors do not understand the problems of the nonsupervising scientist. Some of these may be attributed to the distance from the program supervisor. In a few of the small locations, scientists reported that they did not have enough contact and communication with their program supervisors in Washington and/or in the regional headquarters. However, these opinions were expressed as frequently in the Washington-Beltsville area and in large laboratories as in small stations. Criticism seemed to center on the immediate supervisor for his inability to keep informed on administrative and program activities, supporting the common belief that communications from the top stop at the investigation leader level. Also, some concern was expressed about their supervisor's competence and qualifications, and with reorganizations that are instituted without warning and insufficient explanation.

Most seemed impressed with their administrators and research program directors, but were concerned about their giving little attention to problems of research. Several believed administrators are too prone to bow to criticism. Others were under the impression that political considerations weigh too heavily in determining research programs, and that basic research often has to be hidden under programs that have political support. One suggested that the Department has an "inferiority complex," and others expressed a similar view.

Recruitment

Some scientists who had been involved in recruitment strongly criticized organizational delays and restrictions. Strong candidates have been lost because of inability to obtain prompt action. They expressed the view that a strong information program is needed to explain the type of research the Department conducts and to publicize employment opportunity. In addition, the Department should utilize more fully in recruitment its widespread location of scientists at colleges and universities.

A reverse problem was also cited -- that of discontinuing unsatisfactory research workers.

Evaluation of Quality of Colleagues and Supervisors

Although limited information precluded evaluation of the comments received regarding administrators and research program directors, the task force members believe they merit some concern.

The task force recognized that the recruitment program needs attention if the Department is to attract its share of competent scientists. Some university faculties are not encouraging their best students to accept Department employment. This may, in part, reflect unfulfilled research ambitions of former students in Department employ. Many students accept Department appointments because of possible opportunity to work with an outstanding scientist but this is not always realized.

The supervisor is a critical element in the scientist's job satisfaction.

CHAPTER IV

Survey Findings on Objective III

PARTICIPATION OF DEPARTMENT IN TRAINING AGRICULTURAL SCIENTISTS

Summary:

Location at a land-grant institution helps to promote involvement in training graduate students. A considerably larger number of scientists at these locations were guiding graduate students than at other locations. A few employees, even though located many miles from the college or university, were engaged in such training. Supervision of graduate students was intellectually stimulating to the scientist and helped the research program.

The majority of scientists interviewed favored training of graduate students in Department laboratories and providing financial assistance on a selective basis.

Participation in teaching was also considered intellectually stimulating by Department scientists. Those who teach should have attained eminence in a specific field. About one course a year was believed to be the maximum undertaking.

The Washington-Beltsville Area

About 10 percent of the scientists interviewed in the Washington-Beltsville area were teaching or had taught courses at the graduate or undergraduate level. A few of these were teaching in the USDA Graduate School. General satisfaction was expressed by those who had experience in teaching. They thought it proved to be an intellectual stimulus and could help in recruitment and in building a more favorable public image for the Department. This viewpoint was not unanimous. Some scientists believed teaching was likely to detract from the research job. Others expressed the view that teaching should be limited to those Department scientists who had attained some eminence in a particular field, and then only to a limited extent.

Several of the scientists interviewed were advising or supervising graduate students. Others were only indirectly involved in such training. The varied activities included counseling a student on an informal basis, working in a laboratory where a graduate student was obtaining training, and working with graduate students during summer employment. Despite the fact that there was not much involvement with graduate student training, the majority of those interviewed favored it.

Most of the employees interviewed in the Washington-Beltsville area approved the concept of financial support for graduate students

by the Department. Many believed that it would aid the Department research program and improve recruitment opportunities. A few said that research would suffer or that conditions should be stipulated such as requiring future service from students supported. One said that adequate fellowships were already available. A second person saw a positive value in complementing the National Science Foundation program in social sciences. A third person suggested that the Department should pay one-half of the moving expenses of graduate fellows. One scientist was especially interested in working with post-doctoral fellows.

Locations at Land-Grant Institutions

A relatively few Department scientists were teaching formal courses at land-grant universities and colleges. A considerably larger number were guiding graduate students at the 11 locations visited. The degree of assistance ranged from supervising training to consultation or serving on a student's committee.

The reaction of scientists to teaching was generally favorable provided control was established to prevent interference with the research program. Several believed that one course per year was all that a research worker could teach and still make progress on his research project. Aiding in recruitment and giving students a better knowledge of the Department were cited as indirect benefits from teaching. One person believed that involvement in training students should extend to high schools to create a better image of professional agriculture.

At one land-grant location Department employees favored active participation in training graduate students but were generally less interested in teaching. At another location some scientists believed that participation in training of graduate students should be limited to avoid interference with research, and that a graduate student should not take the place of a regular assistant. At other locations, almost the opposite viewpoint was expressed. Most employees involved in teaching did not believe this activity had degraded the quality or amount of research accomplished but, in fact, may have provided considerable stimulus to the research.

Scientists generally favored financial support of graduate students, but there was no agreement on how this should be accomplished. Many believed financial support should be given to applicants carefully screened for aptitude and promise with no restrictions imposed on repayment of funds to the Department or subsequent employment; others would not go this far. One team member, after visiting Department employees at a land-grant university, stated that one fact stood out sharply: many promising young scientists could not have completed their graduate studies without the assistance of the Department--indirectly through cooperative research agreements with an institution, or directly either through part-time employment in the Department while in graduate school, or through adjusted tours of duty to complete graduate study while in full-time employment status.

Colleges and University Locations, Not Land-Grant

Employee participation in training of other scientists at locations near non-land grant universities is very limited. Less than 10 percent of those interviewed were doing any teaching, and that was generally at the undergraduate level and not closely related, or particularly beneficial, to the scientist's field of specialization. About the same proportion participated in the training of graduate students. The only financial support involved summer employment at one location.

The attitude of Department staff members toward teaching was somewhat divided. At one location there was general support; at another location there was little support. Scientists in large laboratories located near non-land grant colleges and universities seemed to give less support to teaching as a means of keeping up-to-date and providing intellectual stimulation than did scientists located at small field stations. Financial support to graduate students received general approval, most scientists believing it would benefit research programs and assist in later recruitment.

There was a general belief that the non-land grant university location offers less opportunity for teaching and graduate student relationships than land-grant college communities. A few people expressed concern about the desirability of teaching on official time.

Non-University Locations with 15 or More Scientists

None of the scientists interviewed at the 5 stations visited were teaching. At one station where the employees have courtesy appointments at the State university even though it was some distance away, they have made suggestions for graduate student research problems. At another station, arrangements had been made with a nearby university to allow work done by a student at the Department field station to be used for a thesis.

Most of the scientists interviewed favored participation in teaching. They believed it would improve the image of the Department and would help the teacher as well as the student.

There was a difference of opinion regarding financial assistance to graduate students by the Department, but it was favored by the majority. The recent graduates at one station favored support whereas older employees had reservations. One employee spoke disparagingly of the idea. At another station, two employees were strongly in favor of financial support to graduate students, but two others were cautious in their response, one believing it would be appropriate only if graduate students were in short supply and the second believing the students should be carefully selected to fit into the work of the station. An assistantship, in which the employee worked for his pay, was favored over a direct grant of funds or scholarship.

Non-university Locations with 5 to 14 Scientists

There were no opportunities for employees in this category of locations to participate in training through teaching or working with graduate students.

Most employees were favorable to participation in teaching, but a few were opposed if done on official time. In any case, this category of locations entails too much isolation to permit satisfactory teaching or training of graduate students.

Those employees who favored participation in teaching and training graduate students thought it would have a desirable influence on the research program and in keeping the employees up-to-date and promoting closer relations with State universities.

Most employees believed that the Department should provide financial assistance or employment opportunities for graduate students. Some, however, were inclined to be somewhat cautious and wanted the Department to be sure the research undertaken by the graduate student fitted in with its program. A few believed it would not be a good thing to do - they worked hard getting their own education and thought others should do likewise.

Non-University Locations with Fewer Than 5 Scientists

A scientist at one of the 7 stations visited served on the faculty of the State university and has had several graduate students working for him under limited appointments. There was no participation in student training at the other stations. When scientists were asked if they would like to have the opportunity to teach or train graduate students, the answers were varied. The belief at one station was that Department workers had limited responsibility in training others. However, employees at the other locations believed it would help the employee as well as the student. The establishment of graduate student assistantships through cooperative agreements with the State university was recommended at one field station. It was stated that summer employment would provide an excellent opportunity for research and experience by the students. At another station the belief was expressed that there should be no restrictions on financially assisted graduate students regarding the career they would pursue after graduation. The scientists here did not desire to teach or be members of a university faculty, although they believed it might lend additional status to their positions.

APPENDIX

EXHIBIT A

UNITED STATES DEPARTMENT OF AGRICULTURE
Office of the Secretary
Washington, D. C. 20250

April 14, 1964

MEMORANDUM TO SECRETARY'S STAFF AND AGENCY HEADS

Task Force to Study the Training and the Scientific Environment of the Department's Research and Education Personnel

To assure the continued excellence of the Department's research and education programs, Dr. Brady has asked that an interagency task force be set up to study the training and the scientific environment of the Department's research and education personnel. Under the supervision of the Director of Science and Education, this task force will evaluate and make recommendations concerning the following:

(1) The training of U.S.D.A. scientists in relation to our current research and education needs, the opportunities to improve that training, and the extent to which these opportunities are used.

(2) The intellectual and scientific environment of the Department scientists and the extent to which these encourage or discourage productive research and education.

(3) The extent of the Department's participation in the training of agricultural scientists through intramural programs and in cooperation with universities.

(4) The need for an expanded training and retraining program for Department scientists as they attack our ever changing research and education needs.

We have asked Dr. Marion Parker, Director of the Crops Research Division of ARS to serve as Chairman of this task force whose membership is attached (see reverse). The members were chosen from among the administrators and scientists in the research and education units of the Department.

May I ask your complete cooperation in supporting the task force as they carry out their assignments. Their work is important to all of us.

/S/ Orville L. Freeman

Task Force Membership

Dr. M. W. Parker, Chairman, ARS
Dr. E. F. Knipling, ARS
Mr. Glavis B. Edwards, ARS
Dr. Steven C. King, ARS
Dr. W. P. Ratchford, ARS
Dr. H. C. Knoblauch, CSRS
Mr. W. T. Pentzer, AMS
Mr. Karl H. Norris, AMS
Dr. Kenneth E. Ogren, ERS
Dr. W. Elbert Hendrix, ERS
Dr. Homer Preston, FCS
Dr. George M. Jemison, FS
Dr. Edward Hacskaylo, FS
Dr. W. E. Lavery, FES
Dr. Harlan E. Smith, FES
Mr. Kirby B. Payne, NAL
Mr. C. O. Henderson, OP

EXHIBIT B

LIST OF KEY IDEAS FOR INTERVIEWS

OBJECTIVE I. To evaluate the training of USDA scientists in relation to current and future research and education needs, the opportunities to improve that training, and the extent to which these opportunities are being used.

A. To evaluate the training of USDA scientists in relation to current and future research and education needs

1. If you were evaluating the current training of USDA workers in science and education, what would you consider important?

2. What technical problems have you encountered in the last few years that could have been overcome by additional education or training?

3. In addition to college courses, could you give me some examples of the kind and duration of special training (workshops, seminars, short courses, orientation courses, on-the-job, self-training, etc.) that have helped you in your current research and/or education responsibility?

4. What kind of training program would you propose that would prepare USDA workers in science and/or education to meet future needs? Could you give me an example from your own area of responsibility?

5. How do you consider that the training of USDA workers in science and/or education compares with others in the same field in the universities and in industry?

B. To evaluate the opportunities to improve training.

1. If you had the opportunity (that is, if time and funds were no problem) to spend a year improving your qualifications in science or education, what would you do?

2. Do you feel that your opportunities for additional formal education or training are adequate? What changes would improve these opportunities?

3. Could existing formal courses give you the special training needed to better prepare you for advanced research or education in your current project? If not, what is needed?

4. What responsibility, if any, do you think the Department should assume for your continuing education and training?

5. Are facilities available for adequate training at your present location? If not, where could you obtain training?

6. Do your supervisors encourage you to obtain additional training?

7. When was the last time your supervisor discussed your training needs and plans for fulfilling these?

8. What has been the value of USDA in-house training? Could you give me an example?

9. What are your opportunities for self-training?

10. Would you favor a study and retraining leave program for Federal employees?1/

C. To evaluate the extent to which training opportunities are being used

1. How much of your working time do you feel should be spent in training for self-improvement?

2. Are you aware of the various kinds of assistance that might be obtained from the Department? Name some (Training Act--P.L. 507, Exchange Authority--P.L. 918, temporary reassignment, etc.)

3. Have you had the opportunity to use any of these in the past 3 years? Which one, and for how long?

4. Have you used the adjusted work schedule arrangement? What have you done at Government expense and what on your own time and expense?

5. Have any requests for special training been refused? What kind, and do you know why?

OBJECTIVE II. To evaluate the intellectual and scientific environment of the Department scientists and the extent to which these encourage or discourage productive research and education.

A. Program environment

1. How do you feel about your opportunity to participate in

1/ After 6 years of service, an employee would be permitted to take 6 months to a year at full pay to follow a program of his choice, subject to approval of his agency.

the planning and execution of your research program? How do you feel about your opportunity to contribute ideas to the solution of the problem?

2. Is your agency making best use of your qualifications and competence? If so, how? If not, how can the situation be improved?

3. How do you feel about the recognition that USDA scientists/educators receive for their accomplishments, both formal (honors and/or promotions) and informal (adequate credit)?

4. Do you participate in Extension activities; e.g., visiting producers or others interested in your findings? Do you enjoy this? Is the amount of time you spend about right? Do you have the training for this? How about time spent with casual visitors (i.e., those not visiting you to discuss your research)? How about time spent on administrative management matters; e.g., procurement?

5. How do you feel about the policies that affect you regarding attendance at scientific meetings and conferences? How about policies regarding participation in the activities of professional societies? Are you presently active in some society? In what way?

B. Intellectual environment

1. Do you have opportunity to exchange information with other scientists? Do you consider yourself part of the scientific community of knowledge--locally, nationally, internationally? Do the people in your unit have the kind of relationships that they should have with other scientists? With university faculties? What improvements, if any are needed, would help?

2. Are you free to publish your research findings? If not, what are the restrictions on you?

3. How do you feel about your opportunity to attend, on official time, seminars or special lectures dealing with science and education?

4. How do you rate the library service available to you? Is this a USDA service?

C. Physical Environment

1. Do you have any suggestions regarding the support you receive from subprofessional, clerical, and stenographic personnel?

2. How do you feel about your physical facilities--space, instruments, study and writing space, or any similar resource?

3. How do you feel about your location--
   (a) As a place to accomplish your undertaking?
   (b) As a place suitable for scientists?

4. Are technical, editorial, statistical, and computer services, and similar staff services, adequate for your needs?

D. Quality of peer colleagues and program supervisors

1. What do you think of the scientific competence and training of your colleagues at about the same grade as yourself?

2. Overall, how do you rate the competence and training of program management at the various levels in your agency?

3. Are we recruiting the competent personnel we need to accomplish the USDA mission? If not, what problems have been encountered?

OBJECTIVE III. To determine the extent of the Department's participation in the training of agricultural scientists and the desirability of an increase in this participation.

1. Considering the need for trained scientists in your discipline, how do you feel about the financial support of graduate students by the Department?

2. What are your suggestions to have the Department encourage and support graduate students?

3. Have any Department-supported graduate students been assigned to you as assistants within the past 3 years? What was the nature of this assistance?

4. Have you taught graduate courses within the past 3 years? What kind? About how many students?

5. Have you formally participated in the training of graduate students in the past 5 years (as by advising, directing thesis research)? If so, how many students?

6. Do you have faculty status? Do you serve as a member of the examining committee for degree candidates?

7. Within the past few years have postdoctoral trainees or scientists from other agencies (State or Federal) or institutions come to you for training? Could you give a few examples?

8. Do you serve as a consultant or expert adviser to other scientists or educators?

9. Have you taught undergraduate students within the past 3 years? What kind? About how many students? Does your station participate in the support of undergraduates (e.g., by summer employment)?

10. Can you describe benefits you or your program have received from your participation in training as a teacher?

11. How would you feel about your station's possible development of cooperative agreements with universities whereby graduate students could carry out their research as part of the station's or laboratory's research or education program? Would you desire to have such a student assigned to you?

12. How do you feel about the Department's possible sponsorship of graduate assistantships and/or fellowships to provide financial support of graduate and postdoctoral students? Would you desire to have such an assistant or fellow assigned to you?

13. All in all, how do you rate your station's present activity in training?

EXHIBIT C

SYMBOLS OF AGENCIES AND DIVISIONS, U.S. DEPARTMENT OF AGRICULTURE, INCLUDED IN THIS STUDY

ARS - Agricultural Research Service
- ADP - Animal Disease and Parasite Research Division
- AE - Agricultural Engineering Research Division
- AH - Animal Husbandry Research Division
- CFE - Consumer and Food Economics Research Division
- CH - Clothing and Housing Research Division
- CR - Crops Research Division
- ENT - Entomology Research Division
- EU - Eastern Utilization Research and Development Division
- FR - Farm Research
- FRTP - Foreign Research and Technical Programs Division
- HN - Human Nutrition Research Division
- MQ - Market Quality Research Division
- MR - Marketing Research
- NCIUR - Nutrition, Consumer and Industrial Use Research
- NCU - Nutrition and Consumer Use
- NU - Northern Utilization Research and Development Division
- OA - Office of Administrator
- SU - Southern Utilization Research and Development Division
- SWC - Soil and Water Conservation Research Division
- TF - Transportation and Facilities Research Division
- URD - Utilization Research and Development
- WU - Western Utilization Research and Development Division

CSRS - Cooperative State Research Service
- PESP - Program Evaluation and Special Reports
- PS - Program Staff Coordination

ERS - Economic Research Service
- DTA - Development and Trade Analysis Division
- ESA - Economic and Statistical Analysis Division
- FPE - Farm Production Economics Division
- RA - Regional Analysis Division
- ME - Marketing Economics
- RDE - Resource Development Economics Division

FCS - Farmer Cooperative Service
- MS - Management Services Division
- P - Purchasing Division

FES - Federal Extension Service
- ASTM - Division of Agricultural Science, Technology and Management
- ERT - Division of Extension Research and Training
- INF - Division of Information
- MUS - Division of Marketing and Utilization Sciences
- RDP - Division of Resource Development and Public Affairs

FS - Forest Service
FEM - Division of Forest Economics and Marketing Research
FP - Division of Forest Protection Research
FPE - Division of Forest Products and Engineering Research
FSA - Forest Service Administration
TM - Division of Timber Management Research
WRR - Division of Watershed, Recreation, and Range Research

NAL - National Agricultural Library

OP - Office of Personnel

SRS - Statistical Reporting Service
S&R - Standards and Research Division

TABLE 1.--Location of research and education personnel by agencies and division

December 31, 1963

Agency and division 1/	Professional employees	Percentage located in--			
		Washington and Beltsville	Puerto Rico, Virgin Islands, and foreign countries	University communities	Non-university communities in which number of agricultural scientists is--
					15 or more / 5 to 14 / Fewer than 5
ARS:					
AE	140	19.3	0.7	56.4	19.3 / 3.6 / 0.7
ADP	190	22.6	1.6	54.2	18.9 / 1.1 / 1.6
AH	157	62.4	--	22.3	0.6 / 8.3 / 6.4
CR	757	23.6	2.0	43.1	17.2 / 10.2 / 4.0
ENT	423	28.4	4.0	36.4	15.6 / 10.4 / 5.2
SWC	412	17.5	1.2	48.1	10.9 / 14.3 / 8.0
FR	2,079	25.9	2.0	43.0	14.7 / 9.6 / 4.8
EU	217	26.7	--	73.3	-- / -- / --
NU	220	--	--	100.0	-- / -- / --
SU	249	--	--	85.1	10.4 / 2.4 / 2.0
WU	260	--	--	98.1	-- / -- / 1.9
URD	946	6.1	--	89.4	2.7 / 0.6 / 1.1
CH	24	100.0	--	--	-- / -- / --
CFE	46	100.0	--	--	-- / -- / --
HN	71	100.0	--	--	-- / -- / --
NCU	141	100.0	--	--	-- / -- / --
MQ 2/	144	42.4	--	34.0	19.4 / 0.7 / 3.5
TF 2/	91	65.9	--	15.4	7.7 / 3.3 / 7.7
MR	235	51.5	--	26.8	14.9 / 1.7 / 5.1
OA and FRTP	79	93.7	6.3	--	-- / -- / --
Total	3,480	26.8	1.3	51.6	10.5 / 6.0 / 3.5

--Continued

TABLE 1.--Location of research and education personnel by agencies and division, December 31, 1963--Continued

Agency and division 1/	Professional employees	Percentage located in --				
		Washington and Beltsville	Puerto Rico, Virgin Islands, and foreign countries	University communities	Non-university communities in which number of agricultural scientists is--	
					15 or more	5 to 14	Fewer than 5
FS:							
TM	294	3.4	2.0	44.2	20.4	19.0	10.9
WRR	221	5.0	--	61.5	15.4	10.9	7.2
FP	252	8.3	0.8	72.2	15.5	2.4	0.8
FPE	216	2.3	--	93.1	2.3	1.4	0.9
FEM	137	10.2	--	57.7	26.3	4.4	1.5
FSA	57	28.1	3.5	50.9	17.5	--	--
Total	1,177	6.5	0.8	64.3	15.6	8.1	4.6
ERS:							
ESA	68	94.1	--	5.9	--	--	--
FPE	142	41.5	--	54.9	2.8	0.7	--
RDE	107	37.4	--	54.2	--	--	8.4
ME	159	70.4	--	27.7	--	--	1.9
DTA	41	92.7	7.3	--	--	--	--
RA	58	100.0	--	--	--	--	--
Total	575	64.5	0.5	32.0	0.7	0.2	2.1
FCS	49	100.0	--	--	--	--	--
SRS	22	77.3	--	22.7	--	--	--
Research total	5,303	27.3	1.1	51.9	10.4	5.8	3.5
CSRS	43	100.0	--	--	--	--	--
FES	108	100.0	--	--	--	--	--
Library	58	100.0	--	--	--	--	--
USDA Res. and related services	5,512	30.0	1.1	49.9	10.0	5.6	3.4

1/ See appendix, exhibit C, for full name of agencies and divisions.
2/ Transferred from Agricultural Marketing Service, July 1, 1964.

TABLE 2.--Level of academic training completed by research and education personnel by agencies and division, December 31, 1963

Agency and division 1/	Professional employees	Percentage distribution of academic degrees				
		Doctor's	Master's	Bachelor's	D.V.M.	None
ARS:						
AE	140	7.9	38.6	52.9	--	0.7
ADP	190	28.4	24.2	16.3	31.1	--
AH	157	49.0	26.1	21.0	1.3	2.5
CR	757	68.4	21.0	10.0	--	0.5
ENT	423	37.6	27.9	33.8	--	0.7
SWC	412	34.5	40.3	25.2	--	--
FR	2,079	46.2	28.1	22.2	2.9	0.6
EU	217	37.8	14.3	41.9	--	6.0
NU	220	31.8	22.7	45.5	--	--
SU	249	17.3	24.9	55.0	--	2.8
WU	260	37.7	17.7	43.5	--	1.2
URD	946	31.0	20.0	46.6	--	2.4
CH	24	29.2	45.8	20.8	--	4.2
CFE	46	19.6	43.5	37.0	--	--
HN	71	25.4	33.8	32.4	--	8.5
NCU	141	24.1	39.0	31.9	--	5.0
MQ 2/	144	33.3	30.6	33.3	--	2.8
TF 2/	91	6.6	29.7	54.9	--	8.8
MR	235	23.0	30.2	41.7	--	5.1
OA and FRTP	79	41.8	36.7	20.2	1.3	--
Total	3,480	39.5	26.7	30.5	1.8	1.6

-- Continued

TABLE 2.--Level of academic training completed by research and education personnel by agencies and division, December 31, 1963--Continued

Agency and division 1/	Profes-sional employees	Percentage distribution of academic degrees				
		Doctor's	Master's	Bachelor's	D.V.M.	None
FS:						
TM	294	26.2	54.1	19.7	--	--
WRR	221	26.2	59.3	14.5	--	--
FP	252	37.3	39.3	23.4	--	--
FPE	216	15.7	39.4	42.1	--	2.8
FEM	137	12.4	42.3	45.3	--	--
FSA	57	17.5	49.1	33.3	--	--
Total	1,177	24.6	47.6	27.3	--	0.5
ERS:						
ESA	68	30.9	29.4	39.7	--	--
FPE	142	36.6	52.1	11.3	--	--
RDE	107	32.7	58.9	8.4	--	--
ME	159	27.7	49.1	23.3	--	--
DTA	41	29.3	41.5	24.4	--	4.9
RA	58	13.8	51.7	27.6	--	6.9
Total	575	29.9	49.0	20.0	--	1.0
FCS	49	18.4	67.3	12.2	--	2.0
SRS	22	9.1	45.5	45.5	--	--
Research total	5,303	34.8	34.2	28.5	1.2	1.3
CSRS	43	81.4	7.0	7.0	4.7	--
FES	108	25.0	48.1	26.9	--	--
Library	58	3.4	51.8	32.8	--	12.1
USDA Research and related services	5,512	34.7	34.4	28.4	1.2	1.3

1/ See appendix, exhibit C, for full name of agencies and divisions.
2/ Transferred from Agricultural Marketing Service, July 1, 1964.

TABLE 3.--Level of academic training completed by research and education personnel by location and agency grouping, December 31, 1963

Location and unit or agency	Profes-sional employees	Percentage distribution of academic degrees				
		Doctor's	Master's	Bachelor's	D.V.M.	None
Washington and Beltsville:						
Agriculture Research Service--						
Crops Research Division -----	179	75.4	16.8	7.8	--	--
Other 5 Farm Res. Div.---------	360	41.9	24.4	30.6	1.9	1.1
Farm Research total---------	539	53.1	21.9	23.0	1.3	0.7
Utilization Research----------	58	37.9	17.2	39.7	--	5.2
Nutrition and Consumer Use Research----------	141	24.1	39.0	31.9	--	5.0
Marketing Research [1]----------	121	22.3	31.4	38.8	--	7.4
Administrator's Office----------	74	41.8	36.7	20.2	1.3	--
ARS total----------	933	42.9	26.6	27.2	0.9	2.5
Forest Service----------	77	33.8	44.2	22.1	--	--
Economics Research Service------	371	26.1	46.4	25.9	--	1.6
Farmers Cooperative Service-----	49	18.4	67.3	12.2	--	2.0
Statistical Reporting Service---	17	11.8	41.2	47.1	--	--
USDA total----------	1,447	36.9	34.1	26.3	0.6	2.1
Puerto Rico, Virgin Islands, and foreign countries----------	59	45.8	18.6	32.2	3.4	--
University communities:						
Agricultural Research Service--						
Crop Research Division--------	326	69.3	22.4	7.7	--	0.6
Other 5 Farm Res. Div.--------	569	32.3	33.0	28.3	6.3	--
Farm Research total---------	895	45.8	29.2	20.8	4.0	0.2
Utilization Research----------	846	30.4	20.1	47.4	--	2.1
Marketing Research [1]----------	63	22.2	28.6	46.0	--	3.2
ARS total----------	1,804	37.7	24.9	34.1	2.0	1.2

--continued

TABLE 3.--Level of academic training completed by research and education personnel by location and agency grouping, December 31, 1963--Continued

Location and unit or agency	Profes-sional employees	Percentage distribution of academic degrees				
		Doctor's	Master's	Bachelor's	D.V.M.	None
University communities.--Con.:						
Forest Service	757	24.6	46.5	28.1	--	0.8
Economics Research Service	184	39.1	52.2	8.7	--	--
Statistical Reporting Service	5	--	60.0	40.0	--	--
USDA total	2,750	34.1	32.7	30.8	1.3	1.0
Non-university, more than 15 scientists:						
Agricultural Research Service						
Crops Research Division	130	72.3	13.1	13.1	--	1.5
Other 5 Farm Res. Div.	175	33.1	29.7	27.4	7.4	2.3
Forest Service	184	25.5	47.8	26.6	--	--
All Other	65	33.8	27.7	35.4	--	3.1
USDA total	554	39.9	31.6	24.7	2.3	1.4
Non-university, 5-14 scientists:						
Agricultural Research Service						
Crops Research Division	77	45.5	37.7	16.8	--	--
Other 5 Farm Res. Div.	123	26.0	45.5	28.5	--	--
Forest Service	95	18.9	57.9	23.2	--	--
All Other	11	27.3	27.3	45.4	--	--
USDA total	306	28.8	46.7	24.5	--	--
Non-university, fewer than 5 scientists:						
Agricultural Research Service						
Crops Research Division	30	56.7	30.0	13.3	--	--
Other 5 Farm Research Div.	69	13.0	52.2	30.4	4.3	--
Forest Service	54	18.5	51.9	29.6	--	--
All Other	34	8.8	50.0	38.2	--	2.9
USDA total	187	20.9	48.1	28.9	1.6	0.5

1/ Transferred from Agricultural Marketing Service, July 1, 1964.

TABLE 4.--Number of interviews conducted within location categories by agency and division, 1964

Agency and division 1/	Location category 2/						Total
	1	2a	2b	3	4	5	
ARS: ADP	3	26	1	--	--	--	30
AE	3	9	1	2	--	--	15
AH	6	4	1	--	--	1	12
CR	19	11	--	3	8	4	45
ENT	6	3	2	--	4	2	17
SWC	7	27	--	6	10	5	55
CH	--	--	--	--	--	--	0
CFE	3	--	--	--	--	--	3
HN	6	--	--	--	--	--	6
EU	5	--	20	--	--	--	25
SU	--	--	22	--	--	--	22
NU	--	--	21	--	--	--	21
WU	--	21	--	--	--	--	21
MQ	5	1	1	7	--	--	14
TF	1	4	1	--	--	--	6
ERS: ME	12	3	1	--	--	--	16
FPE	7	5	--	--	--	--	12
RDE	1	1	1	--	--	--	3
DTA	3	--	1	--	--	--	4
ESA	4	--	--	--	--	--	4
RA	3	--	--	--	--	--	3
FS: WRR	1	1	2	5	3	--	12
TMR	1	2	4	3	1	--	11
FPR	1	--	--	1	--	--	2
FEM	1	1	--	1	--	--	3
FRER	1	28	--	3	--	--	32
FCS: MS	4	--	--	--	--	--	4
P	1	--	--	--	--	--	1
FES: RDP	2	--	--	--	--	--	2
ERT	1	--	--	--	--	--	1
INF	2	--	--	--	--	--	2
MUS	1	1	--	--	--	--	2
ASTM	1	--	--	--	--	--	1
CSRS: PS	3	--	--	--	--	--	3
PESP	1	--	--	--	--	--	1
SRS: S&R	1	--	--	--	--	--	1
NAL	6	--	--	--	--	--	6
OP	1	--	--	--	--	--	1
Total	123	148	79	31	26	12	419

1/ See appendix, exhibit C, for full name of agency and division.

2/ 1, Washington-Beltsville area;
2a, Land-grant universities and colleges;
2b, Other colleges and universities;
3, Non-university locations with 15 or more scientists;
4, Non-university locations with 5 to 14 scientists;
5, Non-university locations with fewer than 5 scientists.

TABLE 5.--Number of field locations visited by Task Force teams, by categories, 1964

Location category 1/	Locations visited by team No.--								Total
	1	2	3	4	5	6	7	8	
2a	1	2	-	2	1	1	3	1	11
2b	1	-	2	1	2	1	1	1	9
3	1	1	1	-	-	2	-	-	5
4	1	-	1	1	-	1	1	-	5
5	1	2	-	1	1	-	1	1	7

1/ See appendix table 4, footnote 2.

TABLE 6.--Number of interviews conducted by Task Force teams, by location categories, 1964

Location category 1/	Interviews by team No.--								Total
	1	2	3	4	5	6	7	8	
	No.	No.	No.	No.	No.	No.	No.	No.	
1	16	15	14	16	17	15	16	14	123
2a	11	26	--	29	22	12	36	12	148
2b	20	--	24	1	26	2	2	4	79
3	2	8	8	--	--	13	--	--	31
4	4	--	2	4	--	8	8	--	26
5	1	5	--	2	2	--	1	1	12
Totals	54	54	48	52	67	50	63	31	419

1/ See appendix table 4, footnote 2.

TABLE 7.--Number of interviews conducted within location categories by grade level, 1964

Grade Level	Location category 1/						Total
	1	2a	2b	3	4	5	
GS-7	5	9	7	-	1	-	22
9	15	21	11	2	3	2	54
11	19	31	18	13	9	4	94
12	26	37	16	6	10	5	100
13	25	31	17	8	2	1	84
14	23	12	5	2	1	-	43
15	10	6	5	-	-	-	21
Unclassified	-	1	-	-	-	-	1
Total	123	148	79	31	26	12	419

1/ See appendix table 4, footnote 2.

PROGRESS REPORT

on Training and Scientific Environment

the problem

Because
New Knowledge
s Exploding...

Unless
le Receives a
Continuing Input
of ***NEW IDEAS***

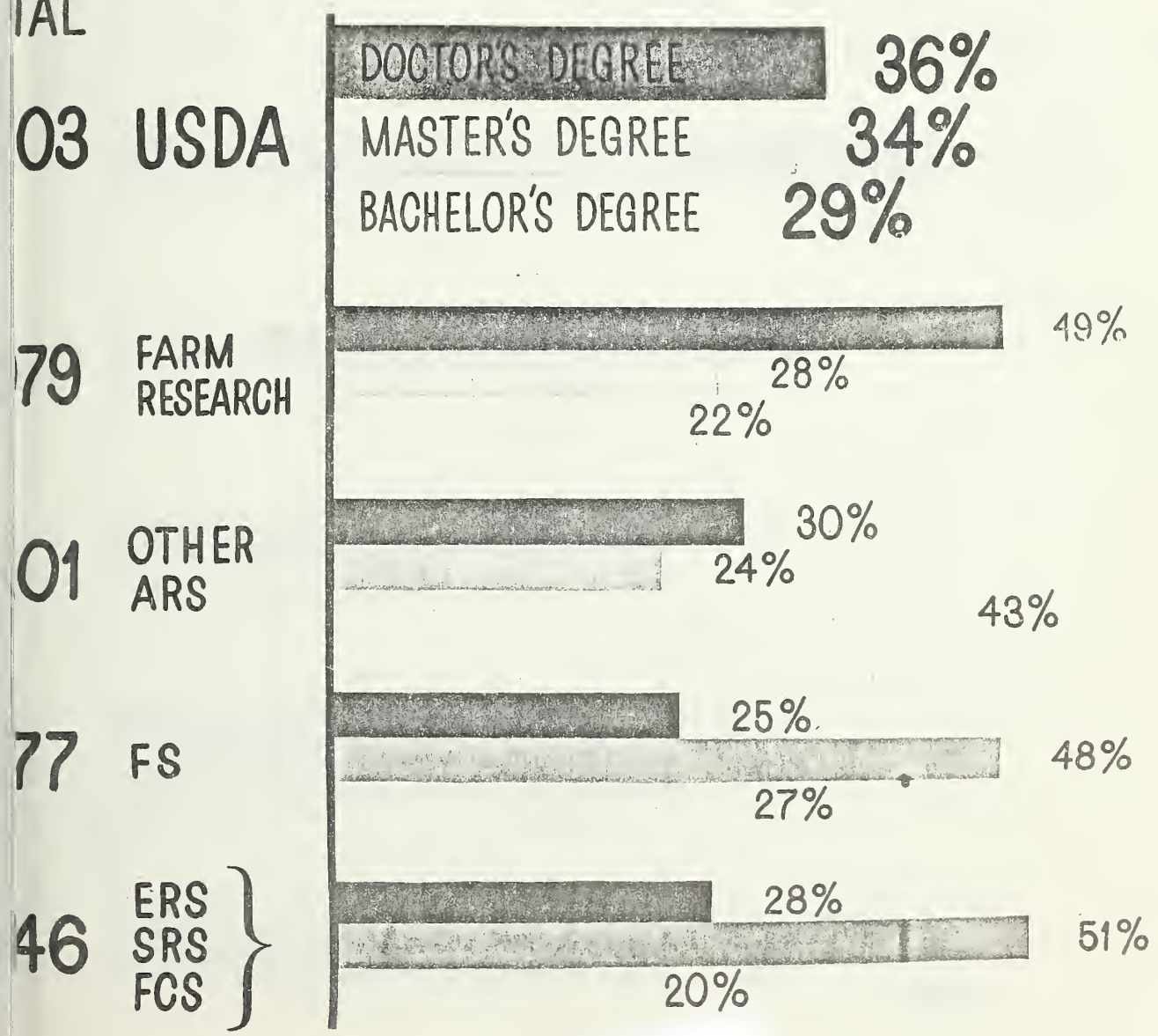
a Scientists
HALF-LIFE is
about ***10 YEARS***

the assignment

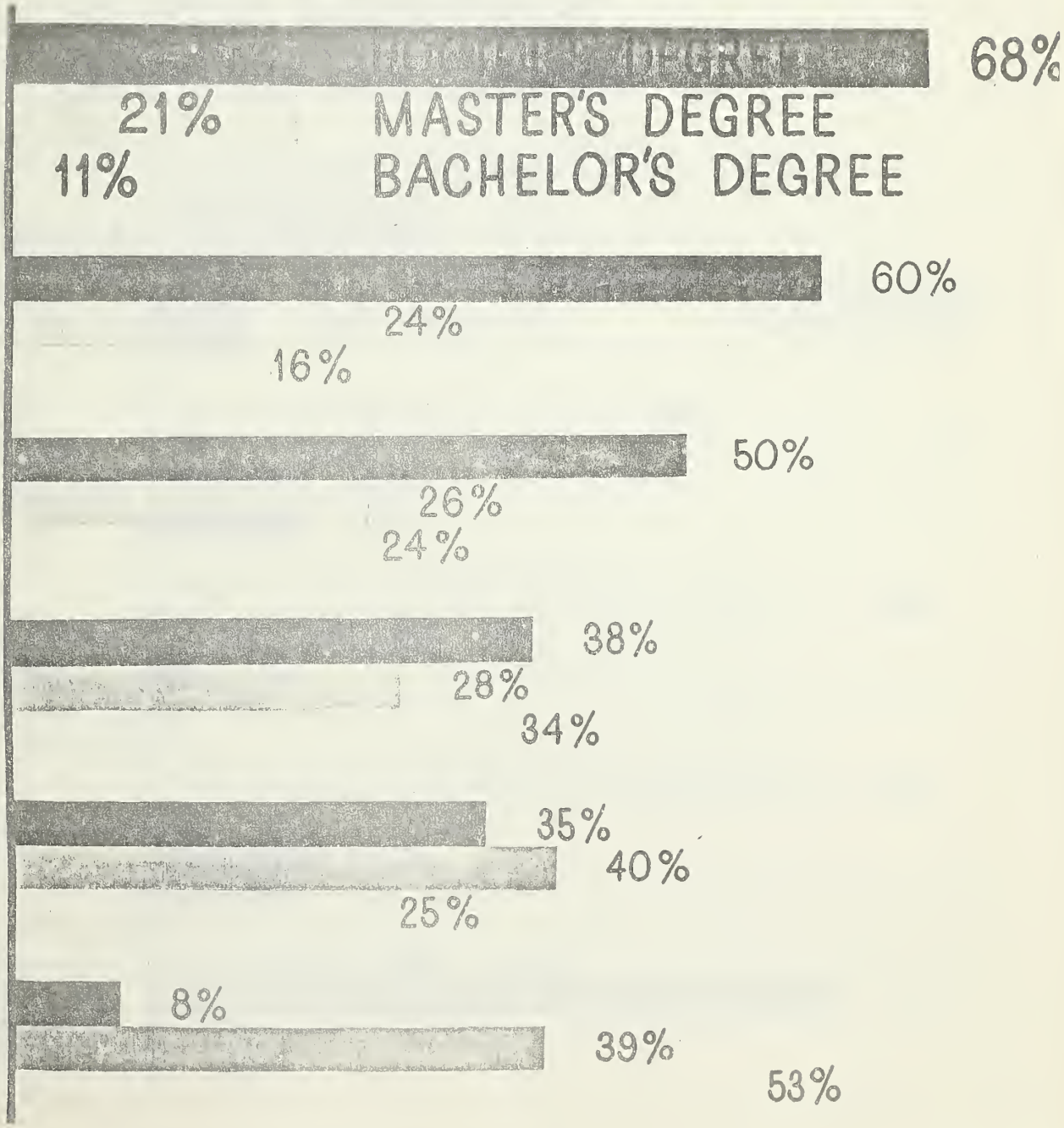
- *Is further training and retraining needed ?*
- *Are we utilizing available opportunities ?*
- *Can available training be improved ?*
- *Should we develop programs and provide trainers ?*
- *Can scientific environment be improved ?*

what about training?

Present Training Level by Highest Academic Degree held by USDA Scientists in Research

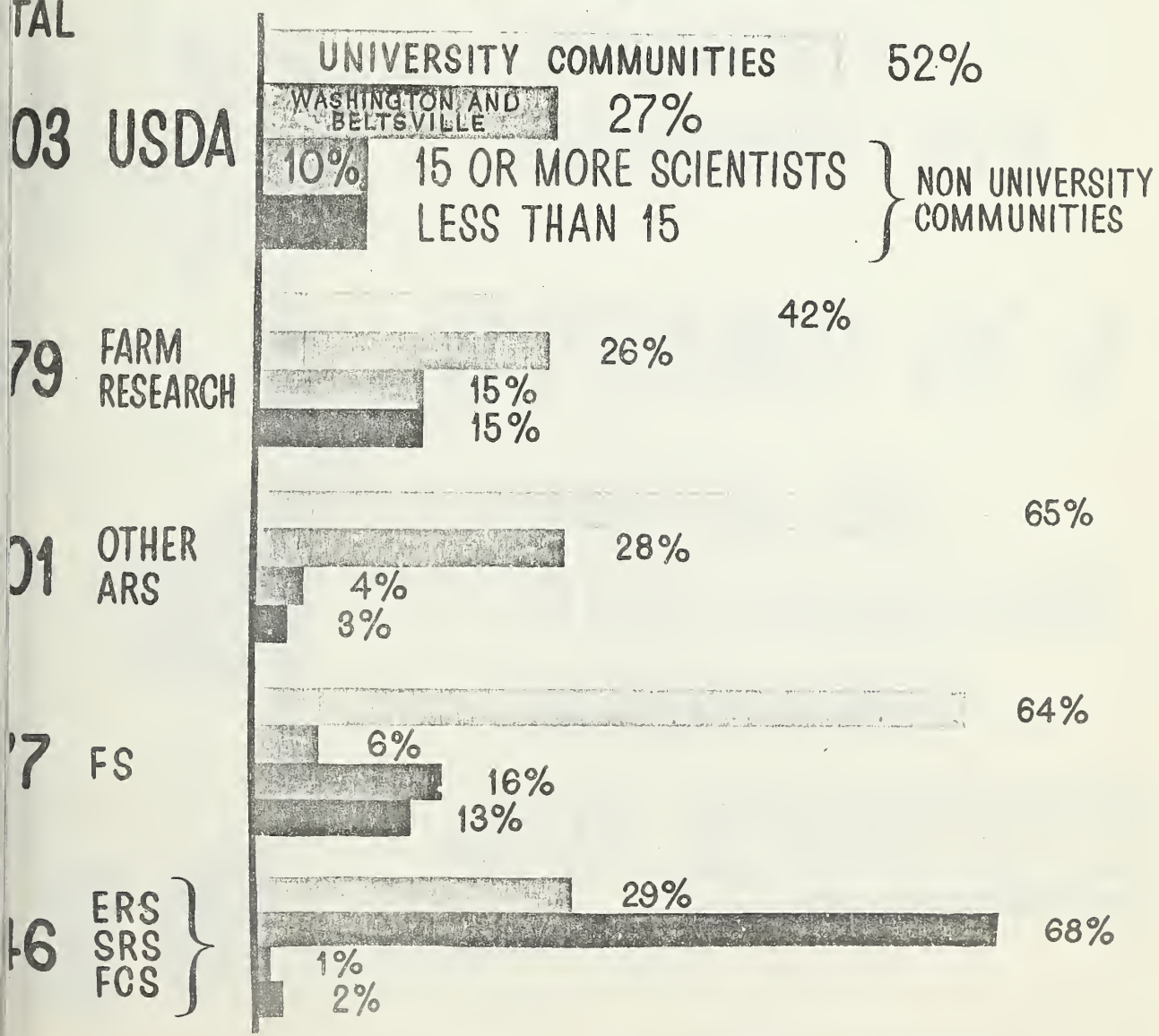


LEVEL OF TRAINING VARIES AMONG DIVISIONS



what about environment?

Type of Scientific Community in which Department Scientists are Located



we tackled the job

THERE WERE 17 OF US

ADMINISTRATORS
SCIENTISTS
PERSONNEL MEN

8 TEAMS OF 2

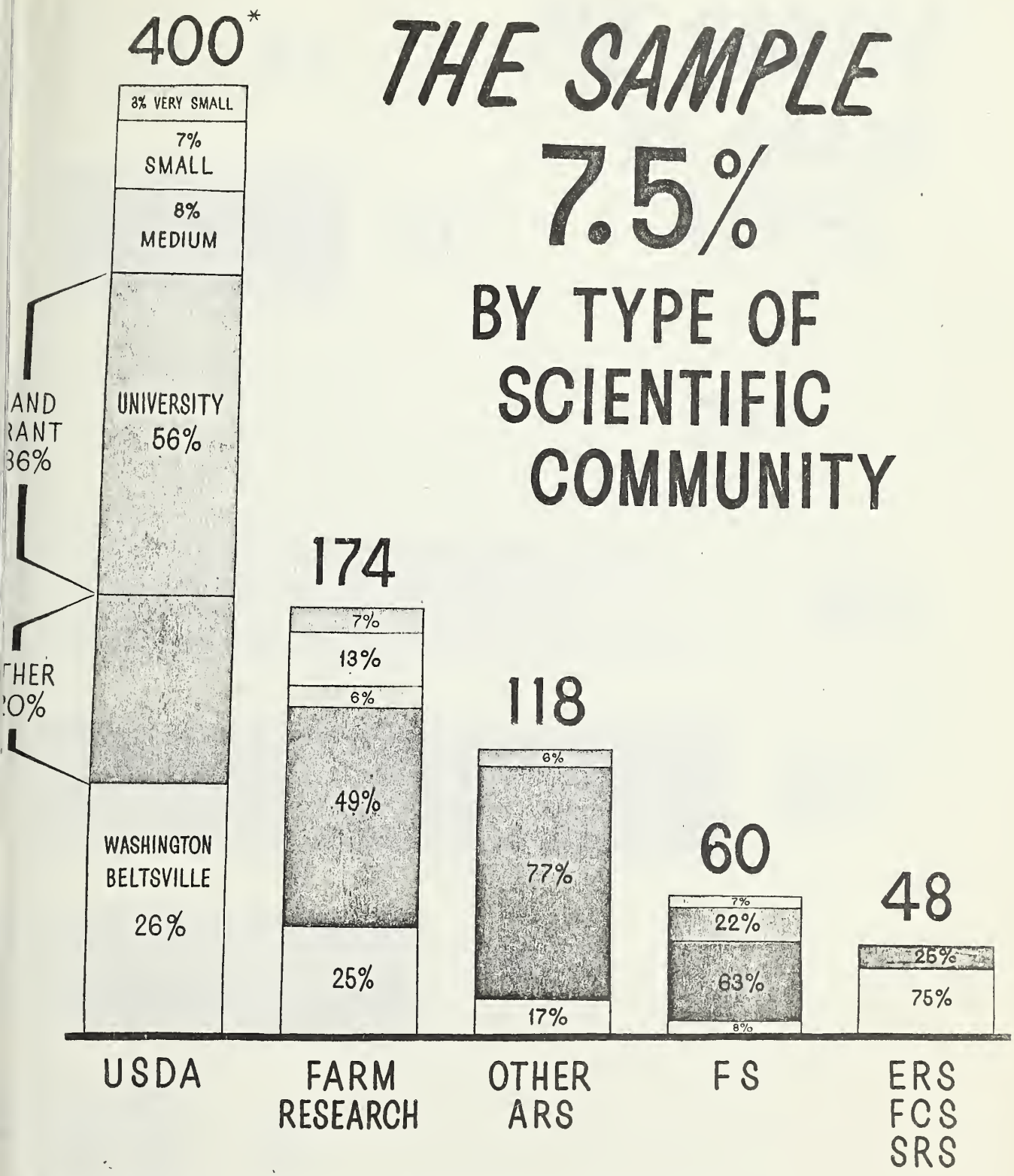
VISITED 37
FIELD LOCATIONS
INTERVIEWED...

419 SCIENTISTS

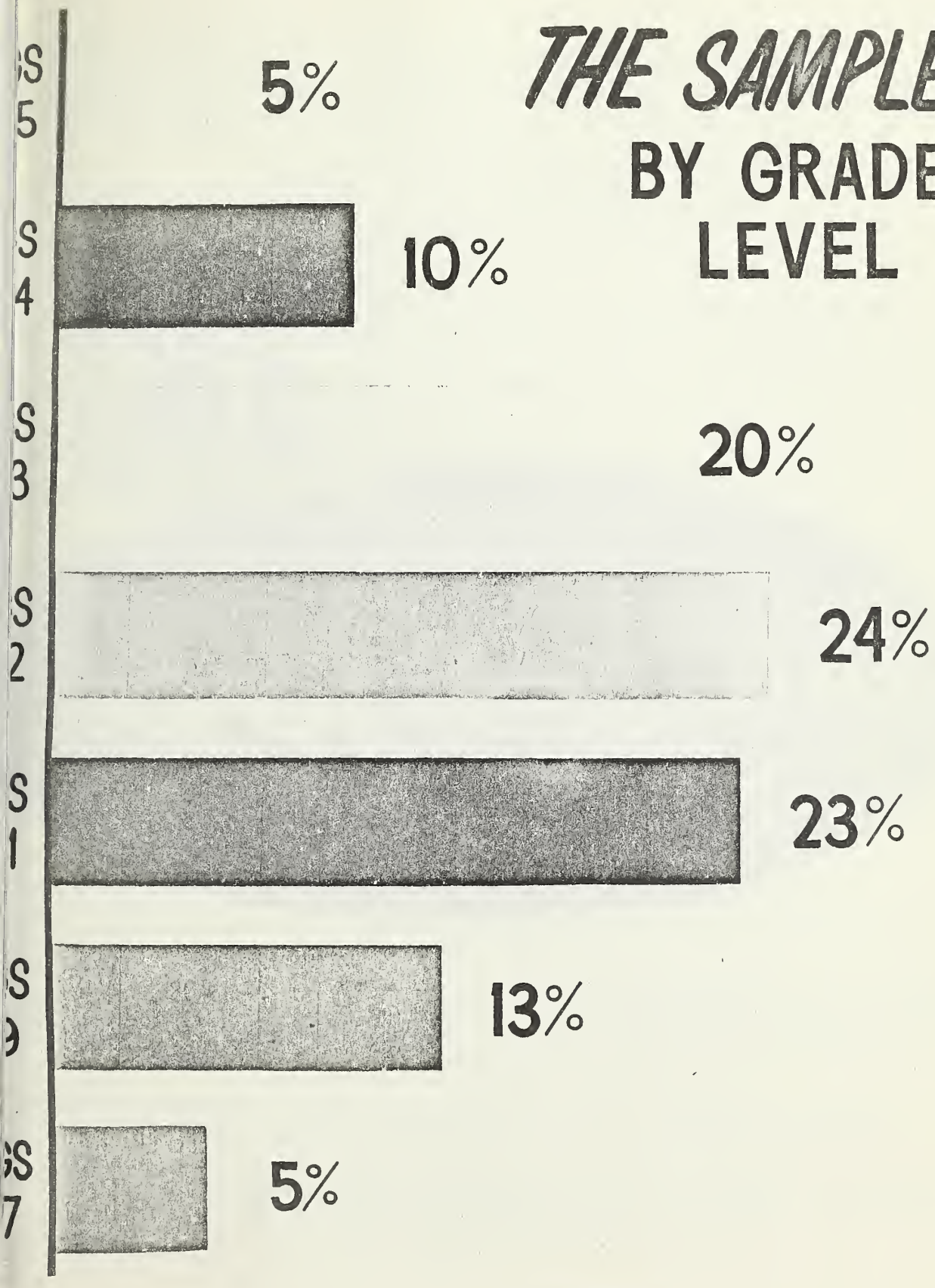
THE SAMPLE

7.5%

BY TYPE OF SCIENTIFIC COMMUNITY



* 19 MEMBERS OF STAFFS OF FES, CSRS, NAL AND OP WERE ALSO INTERVIEWED


THE SAMPLE
BY GRADE
LEVEL
S
5
5%
S
4
10%
S
3
20%
S
2
24%
S
1
23%
S
9
13%
S
7
5%


WE
RECOMMEND:

WIDER PARTICIPATION IN TRAINING

1 *POLICY STATEMENT EMPHASIZING*

- ✓ Continuing training a department concern
- ✓ Responsibility of supervisors
- ✓ Allotment of funds
- ✓ Recognize accomplishment and potential in selection

2 *INFORM STAFF OF OPPORTUNITIES*

3 *A TRAINING PLAN FOR EACH SCIENTIST*

4 *SPECIAL ATTENTION TO THOSE WITH NO FORMAL TRAINING SINCE 1960*

IMPROVE THE TRAINING PROGRAM

- GREATER USE OF OWN COMPETENCE FOR IN-HOUSE TRAINING
- INVOLVE BENCH SCIENTISTS IN PLANNING
- PROVIDE PROGRAM FOR "SUPPORT" PERSONNEL
- APPROVAL BY DIVISION DIRECTOR OF "OUTSIDE TRAINING" UP TO 80 HOURS
- OBTAIN AUTHORITY FOR
  - SABBATIC TYPE LEAVE
  - FELLOWSHIPS

STRENGTHEN USDA's CONTRIBUTION

COOPERATE IN CURRICULUM DEVELOPMENT

AID PROMISING HIGH SCHOOL STUDENTS

ENCOURAGE MORE SCIENCE IN 4-H PROGRAM

ENCOURAGE SCIENTISTS TO ACCEPT

- TEACHING ASSIGNMENTS
- MEMBERSHIP ON GRADUATE COMMITTEES
- FACULTY MEMBERSHIP
- INVITATIONS TO

↓ SPEAK AT SCHOOLS

↓ JUDGE AT SCIENCE FAIRS, ETC.

DECREASE SCIENTIFIC "ISOLATION"

RE-ASSIGN • RELOCATE • ROTATE

MORE COOPERATION-
INTERDISCIPLINARY INTERAGENCY

IMPROVE LIBRARY SERVICES

PARTICIPATE IN SEMINARS-
PROFESSIONAL SOCIETIES

IMPROVE COOPERATION WITH
UNIVERSITIES

LOCATE NEW FACILITIES
AT UNIVERSITIES

IMPROVE MORALE AND VISION

- SUPERVISORY ENCOURAGEMENT OF CREATIVITY
- IMPROVE ORIENTATION OF NEW EMPLOYEES
- PROMPT HANDLING OF MANUSCRIPTS
- STUDY OF MAN-IN-THE-JOB PROMOTIONS
- DEPARTMENT LEADERSHIP IN PROGRAM DEVELOPMENT

IMPROVE SCIENTIFIC PRODUCTIVITY

- IMPROVED FACILITIES AND EQUIPMENT
- MORE "SUPPORT" PERSONNEL
- SPECIAL CLASSIFICATION FOR RESEARCH ASSISTANTS
- GREATER USE OF MANAGEMENT ASSISTANTS
- REDUCTION OF PAPER WORK

TO EFFECTUATE AND FOLLOW-UP ON THESE IDEAS

I. SEMINARS FOR ADMINISTRATORS

2. QUESTIONNAIRE TO ALL SCIENTISTS TO -

- OBTAIN DATA ON CURRENT STATUS
- PROVIDE OPPORTUNITY FOR EACH TO CONTRIBUTE IDEAS

3. EVALUATE EFFECTIVENESS OF TRAINING ACTIVITIES

UNITED STATES DEPARTMENT OF AGRICULTURE

CONDENSED RECOMMENDATION FROM THE PROGRESS REPORT

Task Force to Study the Training and the Scientific Environment of the Department's Research and Education Personnel

September 1964

REASONS FOR STUDY AND METHODS FOLLOWED

Secretary of Agriculture Orville L. Freeman, in a memorandum dated April 14, 1964, established a Departmental interagency task force to study the training and the scientific environment of the Department's research and education personnel.[1] Members of the task force were chosen from among the scientists and administrators of those agencies responsible for research and education activities. The group was charged with the responsibility for evaluating and making recommendations concerning the degree to which Department scientists are trained to meet current and future research and education needs;[2] the intellectual and scientific environment in which these scientists work; and the extent of the Department's participation in the training of scientists.

The task force adopted the personal interview method for obtaining the views of research and education personnel concerning their training needs, opportunities for training, and the research environment within which they work. The employees interviewed were selected to provide representativeness on the basis of grade, agency, division and location.[3] "Location" was divided into the following categories:

1. Washington-Beltsville area.

2a. Land-grant universities and colleges.

2b. Other universities and colleges.

3. Non-university locations with 15 or more scientists.

4. Non-university locations with 5 to 14 scientists.

5. Non-university locations with fewer than 5 scientists.

The orientation of the task force and the design of the interviews did not emphasize refined quantitative and statistical analysis. Rather major emphasis was placed upon exploiting as fully as possible the opportunities for thorough probing of the views and attitudes of the respondents in order to provide for the task

---

1/ See Appendix, Exhibit A.

2/ For data on location and level of education of professional employees in the Department's research and education agencies (as of December 31, 1963), See Appendix Tables 1,2, and 3.

3/ For detailed summaries on professional employees interviewed, see Appendix Tables 4,5,6, and 7.

force full information, varied points of view, creative insights, basic understanding, broad perspectives, and constructive ideas bearing upon the objectives of the survey.

The task force was divided into 8 two-man teams to conduct the personal interviews. Each team conducted several pilot interviews in the Washington-Beltsville area to test a list of key ideas developed by the task force to assure that each team adequately covered the objectives assigned to the task force, and to gain experience.4/ A psychologist, Dr. A. S. Glickman, Chief of the Department's Personnel Research Staff, advised and assisted team members in developing interview techniques.

A total of 419 persons engaged in research and education activities of the Department was interviewed during June-July 1964. Every effort was made to encourage full participation, and assurance was given that comments would be treated confidentially. This report is based on the information obtained from the individual interviews.

Throughout its assignment, the task force was aware of the broad range of research and technical competence imposed by the diverse research and education activities of the Department. This broad range of competence, requiring different degrees of training, should be considered in developing training programs. Because of the Department's diverse responsibilities, all of its scientists cannot be assigned to basic or highly complex research and education activities, and no effort should be made to train all employees to the level required for the performance of such activities. However, consideration should constantly be given to training needed at all levels to accomplish the maximum effective performance for each individual.

The task force was also aware of the effective report of the Committee on Utilization of Scientific and Engineering Manpower,5/ and the numerous studies being conducted in the area of education and creativity of scientific manpower, 30 of which are being sponsored by the National Science Foundation.6/

This report of the Department's interagency task force emphasizes those findings which the task force believes should be considered in developing plans for the improvement of training opportunities and environmental conditions for Department research and education personnel. The recommendations reflect the concern and interest of those interviewed, who are believed to be representative of the entire scientific staff of the Department, as well as the interest and concern of the task force members.

4/ See Appendix, Exhibit B, for list of key ideas.

5/ Toward Better Utilization of Scientific and Engineering Talent - A Program for Action. Washington, D. C., 1964. (Report of the Committee on Utilization of Scientific and Engineering Manpower.)

6/ Current Projects on Economic and Social Implications of Science and Technology, 1963. National Science Foundation (NSF 64-10).

The task force is also of the opinion that the action taken by the Secretary to appoint a group to look into the matter of improving training opportunities for Department scientists will in itself stimulate an interest among scientists in improving their training. This stimulation of the need for additional training should result in an improved and more effective public service.

The objectives of the task force were as follows:

OBJECTIVE I. To evaluate the training of USDA scientists in relation to current and future research and education needs, the opportunities to improve that training,7/ and the extent to which these opportunities are being used.

OBJECTIVE II. To evaluate the intellectual and scientific environment of the Department scientists and the extent to which this encourages or discourages productive research and education.

OBJECTIVE III. The extent of the Department's participation in the training of agricultural scientists through intermural programs and in cooperation with universities.

7/ Training was interpreted by the committee as including formal academic study as well as any kind of experience or instruction which better qualifies scientists to carry out their assignments.

Training to Meet Present and Future Needs

1. A policy statement on education and training for scientists should be developed and made available to all employees engaged in research and education.[8] This policy statement should:

a. Reaffirm the interest and concern of the Department in continued training of scientists in research and education.

b. Emphasize the responsibility of the research or education program supervisor to give each scientist working with him the direction, assistance, and encouragement essential to his understanding of the program of the agency, the need for and objectives of the research to which he is assigned, and the contribution he is expected to make.

c. Encourage allocation of funds from regular agency appropriations to meet those training needs deemed essential for increasing the effectiveness of the agency's scientific manpower.

d. Emphasize that the selection of scientists in research and education for training should reflect recognition of professional accomplishment and potential for future growth.

e. Encourage each research and education unit to develop specific training and retraining programs for scientists with goals for each branch, division, and agency.

2. The Department should encourage and assist all research and education agencies to develop a procedure for informing all scientific workers of the training opportunities available to them. Each agency should designate a point of contact where its research and education personnel could obtain information on availability of training opportunities to meet special needs and procedures for applying for such training.

3. A study and retraining leave program should be established within the Department. Participation should be limited to those who have demonstrated unusual scientific competence.

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[8] The Director of Science and Education has requested the task force to prepare for consideration and review a proposed policy statement.

4. Each research and education agency in the Department should develop a program in which the research leader would determine, after consultation with the scientist concerned, individual training needs for each scientist under his supervision. Special consideration should be given to the training needs of those who have completed their highest academic degree 5 or more years ago, and who have had little or no formal study and training since that time. Technical support personnel, particularly those with several years of experience, should also be given training opportunities to increase their capabilities and develop their full potential.

5. Opportunities should be provided scientists to take formal academic courses related to their field of work without reference to fulfilling the requirements for an advanced degree.

6. The outstanding scientific competence within the Department should be utilized more fully for strengthening training activities within and among agencies.

7. Greater opportunity should be provided scientists in non-supervisory positions to participate in developing topics and choosing speakers for seminars and workshops.

8. Authority should be delegated to research division directors to approve outside training under the Government Employees Training Act for periods up to 80 hours.

9. A more intensified and continuing study should be made of the training and retraining needs of Department scientists in relation to research and education programs.

Intellectual and Scientific Environment

1. The Department should encourage greater participation by scientists in the scholarly activities of recognized professional societies.

2. The Department should develop closer cooperative relations with universities and colleges in order to increase opportunities for intellectual exchange through seminars and other scientific contacts.

3. To offset the disadvantages of isolation to professional development resulting from organizational policy, geographical location, and intellectual environment--

   a. The Department should make more frequent use of temporary intra-agency and interagency reassignments in its training and educational programs.

b. Special effort should be made to increase inter-disciplinary and interagency cooperation.

c. Continued emphasis should be placed on moving scientists to locations providing better scientific environment.

d. Supervisors should visit field locations more frequently, with particular attention to isolated locations.

e. Research at isolated stations should be relocated in a scientific community whenever the major aspects of their program permits.

f. New research facilities should be located on or near a university campus when the program permits.

g. Scientists should be encouraged and provided every opportunity to participate in seminars related to their work.

4. Greater recognition should be given to the essential need for good library services in planning and projecting effective research programs.

5. Deadlines should be imposed on the clearance or disposition of manuscripts at all levels, and the authors should be informed promptly of action.

6. Although the Department's promotion plan for scientists has had a positive effect on their morale, improvement should be made in the Guide for the Evaluation of Positions in Applied and Basic Research with special attention given to possible over-emphasis on publications in evaluating individuals.

7. Detection and encouragement of scientific creativity should be the fixed responsibility of supervisors.

8. Supervisors should spend more time in orienting new employees, in defining their research problems, and in explaining how their research problems fit into the overall program of the agency.

9. New facilities should be constructed, existing space renovated, and equipment in permanent laboratories upgraded as means of increasing the efficiency of scientists, and of establishing a better competitive position for the Department in recruitment and retention of outstanding personnel.

10. Additional technical support personnel should be employed to further the efficiency and productivity of scientists. In some instances better balance between the number of scientists and support personnel at a location could be achieved through improved budget management.

11. A personnel classification series should be developed for research assistants with skills and abilities intermediate between those required of subprofessional technicians and professional scientists.

12. Greater use should be made of administrative management assistants, at those locations with personnel to justify the expenditure, in order to relieve scientists of burdensome, administrative-type paper work. The Government's program to reduce paper work should be strongly supported.

Participation in Training

1. Agencies should be encouraged to develop individual and joint training programs utilizing the outstanding competence and unusual physical facilities available in many disciplines within the Department.

2. The Department should obtain legislative authority to sponsor undergraduate, graduate, and postdoctoral scholarships, fellowships, and assistantships.

3. The Department should determine its future scientific personnel needs, and work with appropriate colleges and universities in developing courses of study to meet those needs.

4. The Department should establish a policy encouraging its scientists to participate as members of graduate faculties of colleges and universities when such opportunities are available to them, and to accept, within practical limits, those teaching and counseling assignments that relate to their work.

5. The Department should sponsor a program to aid and encourage promising high school students that would extend through their undergraduate and graduate training.

6. A policy should be established to permit scientists, on official time, to participate in science fairs, on scholarship committees, and to be guest lecturers at schools on the elementary and secondary levels.